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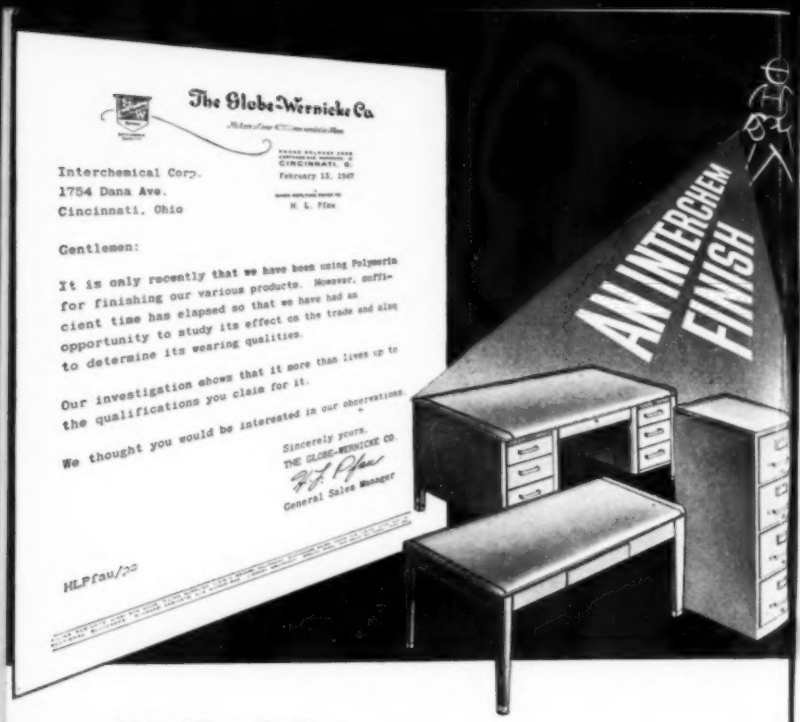
The Globe-Wernicke Co.
CINCINNATI, O.
February 13, 1947
H. L. Pfau
Interchemical Corp.
1754 Dana Ave.
Cincinnati, Ohio
Gentlemen:
It is only recently that we have been using Polymerin for finishing our various products. However, sufficient time has elapsed so that we have had an opportunity to study its effect on the trade and also to determine its wearing qualities.
Our investigation shows that it more than lives up to the qualifications you claim for it.
We thought you would be interested in our observations.
Sincerely yours,
THE GLOBE-WERNICKE CO.
General Sales Manager
HLPfau/pp
AN INTERCHEM FINISH

Globe-Wernicke Says

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The unsolicited letter reproduced above from the General Sales Manager of the Globe-Wernicke Co., is a typical example of the widespread favor which Polymerin has won from manufacturers.

Globe-Wernicke technicians found that Polymerin, the original speed bake finish, can take it. Polymerin resists alkalis, acids, moisture, heat, and abrasives to an unusual degree. What's more, Polymerin is nine times harder to chip than ordinary enamels, is extremely difficult to mar or scratch. Polymerin finished products are easy to clean as Polymerin withstands scouring and cleansing. Polymerin finishes are easy to apply, economical to use, and can be cured in infra-red and convection type ovens.

A Polymerin finish is popular with sales staffs too. Salesmen can assure their customers that a product with "An Interchem Finish" can withstand hard usage and still maintain its original eye appeal. Remember: To give *your* product a good start, give it "An Interchem Finish". Write: Interchemical Corporation, Finishes Division, 350 Fifth Avenue, New York 1, N. Y.

*Reg. U. S. Pat. Of.

Interchem *Finishes*

TWENTY-THIRD YEAR OF PUBLICATION

Industrial FINISHING

W. H. ROHR, Editor P. C. BARDIN, Associate Editor

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Radiant Heating or space heating was known in ancient times. Modern practical applications of this method of heating homes and factories started in 1937. Today there are upward of 10,000 installations and nearly a thousand new ones are being made each month.

Representatives of A. M. Byers Co. made an exhaustive study of 1000 typical installations located in 45 states. They came up with these classifications: Homes and apartment houses 47%, commercial buildings 28%, industrial plants 16%, institutional 8% and miscellaneous buildings 1%.

The floor-heating method has eliminated many of the problems inherent to buildings that have no basement. It was accepted more rapidly for such structures as garages, aircraft hangars, factories and one-story houses. That the system is just as practical for multi-story buildings has been proved by installations in buildings up to eight stories high.

* * *

New Low-Cost Building Unit. At a recent showing in New York, thousands of architects, engineers, builders and others interested in sound, economical construction viewed a completely assembled bay made up of units of a new system.

Key unit in the system is an efficient, precision-assembled metal-clad insulated wall section. This can be erected with ease and has many advantages over older type construction.

A typical unit of this new wall is 3½-in. thick, 52-in. square, and weighs less than 200-lbs. The same area of wall in conventional brick, or brick and tile construction would weigh from seven to 12 times as much. It is economical in cost of erection. Instead of 115 masonry units, each carefully set in mortar by a skilled bricklayer, there is a single light-weight slab quickly bolted into place.

Although these new units are only 3½-in. thick, they are almost six times better as insulation against heat and cold than a solid masonry wall 13-in. thick. This will make for sizable economy in the heating cost of the building. Units may be bolted to conventional building frame for multi-story apartment houses, offices, factories and in residential buildings.

T. A. Biggs and W. W. Krauss, development engineers for Pittsburg Corning Corp., and Republic Steel respectively, supervised engineering and fabricating of several prototype units of the new thin wall.

* * *

Economy Through Packaging. E. A. Throckmorton, president of Containers Laboratories, Inc., speaking before the American Management Association, estimates the annual volume of the packaging supply industries at $8 billion or more per year. *(Cont'd page 10)*

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"Too much has been written about the sanitary advantages of the package and about the merchandising advantages of the package and its great sales possibilities, but little has been said of the waste in distribution eliminated by the package and the reduction in retail operating expenses made possible through packaged merchandise."

This is a different angle on the subject of packaging and it offers a handy selling tool for numerous products.

* * *

More Aluminum will be used in automobiles in 1948, according to an Alco spokesman. Aluminum alloy pistons are standard equipment in many cars. Due to shortages of steel and copper you may see cars coming off the line with aluminum hoods, hub caps and hardware, also battery and ground cables and wiring. Aluminum will cost more but the demand for new cars will probably force manufacturers to use the white metal.

It is too early for all-aluminum bodies, but in the years to come these may be added to the growing list of uses for the white metal. Even with hoods and hub caps we should see some new adventures in finishing. If and when the aluminum body and fenders come into use, the field for color finishing will rise to new and unexplored heights.

* * *

Interest in Costs. According to surveys made by field engineers in the machine tool industry, plant managers are seeking to reduce costs through new and faster equipment and tools.

Little can be done about increased raw material costs and wage rates, therefore the only

other solution is faster, more efficient equipment and improved methods.

More thought and careful attention to production, eliminating waste motions and rerouting materials through the plant may be the only present means of reducing costs. In many plants things are done and operations performed just as they have been for as many years as the plant has operated. No one seems to know why—except that it is customary procedure. Perhaps careful study will effect material savings.

* * *

On Leave for Learning. We hear that Monsanto Chemical Co. granted one of their research engineers a year's leave of absence, with pay, during which he did advanced studying at the Massachusetts Institute of Technology and received his Master's degree. The leave was one of the first of the company's awards for outstanding technical work.

Such leaves have been common practice in institutions of higher learning—and the results have been excellent. There is every reason to believe that results will be equally gratifying for key men in industry to revive and replenish their intellects, to study and practice the latest developments in their particular field and to return inspired and equipped to do better work.

* * *

Exports of American Goods. There is no doubt that the need for American goods in foreign markets is unlimited. But there is serious doubt that the continued boom in export business will last.

D. W. Michener, Associate Director of Research of the Chase

(Continued on page 131)

A SAFE, QUICK
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Introductory trial orders for five gallon lots will be accepted at drum prices, if reference is made to this ad.

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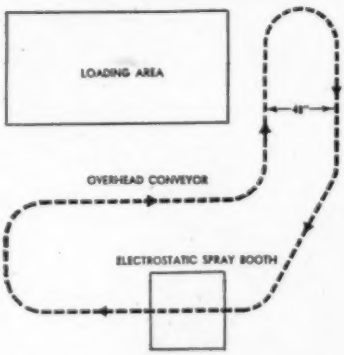
Stains Varnishes Thinners
Synthetics, all types

Electrostatic Spraying of Parts for Heaters

By FRED M. BURT

SWINGING back to the manufacture of peace-time products, the Day & Night Mfg. Co., Monrovia, Calif., entered into a definite improvement program. One project included in this program was the installation of electrostatic spraying in the product painting area. This will be covered in detail further on.

Digressing for a moment to give a little background on the company and its products, Day & Night was started in Monrovia in 1909 to manufacture Solar water heaters which utilize the sun's heat to provide 24-hour hot water service. Thus the name "Day & Night." Later other products were added. Today Day & Night manufactures domestic and commercial gas water heaters, oil-fired water heaters; heating equipment which includes gas wall heaters, portable heaters; refrigeration products and butane cylinders. These units provide a diversity of size and shape in parts to be painted.



Plan of overhead chain conveyor which carries metal parts and products through the electrostatic spray booth. Spray painting is preceded by metal cleaning and followed by an oven bake.

Paint Setup Planned for Smooth Efficient Operation

One of the first innovations was an o erall plan for the paint room, scientifically designed to improve working conditions, increase safety and promote good housekeeping. Among other things an incentive wage system was carefully worked out and placed in operation. In addition to a generous basic wage, incentive payments run up around 50% more for the majority of employees covered. The company gains through 1) maintaining friendly relations with employees, 2) obtaining more production per dollar of payroll cost, and 3) en-

Illustration on opposite page shows two sets of Panelray frames coming through the electrostatic spray zone, rotating clockwise; water-heater casings are in rear. The overhead hood is spread apart to show two racks either of which can be set to engage the small hanger pinion—to make hangers turn in either direction desired. At right of frames, ionizing wires are stretched vertically between horizontal bars of electrode structure. Note motor drive of up-and-down movement of three spray guns. The typical empty hanger in center foreground, with its hinged cross-member rod at the bottom, can be fitted into any of the cylindrical water heater casings to carry it securely.

joying a total manufacturing output of close to twice what it would have had without the plan—all without adding appreciably to personnel, floor space or equipment.

An overall revision of plant layout continues, as a part of the master plan, to make every department and operation contribute to economy in movement for continuous production, while retaining all necessary flexibility for variations in products and operations. A prime factor in doing this in the modern manner included development of a complete plant layout, with all equipment in 3-dimensional ¼-in.-to-the-foot scale models. Some special units were made at the factory, while standard unit models came from Visual Production Planning, Inc. No other system has been devised that pays off so well in results obtained. All future factory improvements can be analyzed and then explained while the scale models rest on a large table. It is just a major application of good old common sense.

Conveyorized Metal Cleaning, Spraying and Baking

Before entering the paint room all parts are cleaned in a solvent machine. Future plans will probably lead to integrating the degreasing conveyor with the spray line and a new continuous oven of larger capacity and speed than the present batch type oven. Since the installation of the electrostatic spray system, the application capacity per hour is much greater than that of the present oven.

The overhead paint conveyor is 66-ft. long and has hangers 30-in. apart. Above its swivel-mounted hooks are pinions that engage either one of two parallel racks to make the part rotate while it is passing through the spraying zone. A change in the direction of rotation can be made by using the other rack. Either rack can be moved into position to engage the pinion.

Paint Pipe Lines and Automatic Spray Setup

Spray guns are mounted on both sides of the line of product travel, so that both sets of guns can be set to spray both sides of flat pieces hanging in vertical position. When cylindrical water heater casings are being painted, three guns on one side are used. These are arranged to move up and down in reciprocating action. The guns can be positioned to remain stationary if desired, or they can be moved closer together, or more guns can be added on either side.

Modern pressure tanks supply the white, ivory, green and aluminum enamels used. These enamels flow to the spray guns in pipes of the same color as the enamel. In the present setup the fluid pressure used is 3½-lbs. per square inch at the spray gun. The atomizing air pressure is stepped down by a regulator to only 20-lbs. per square inch.

It takes about a minute to change from spraying one color to another. First, an airline into the manifold blows the paint that has been in use back into its feed line, past the shut-off valve. Then the valve is closed and the valve on the thinner is opened. The other end of this line is attached to a 10-gallon pressure tank located alongside the enamel tanks. Thinner is run through the lines and spray guns for a short time till they are thoroughly cleaned. Then the thinner is shut off and new enamel is turned on. In a few seconds the spray comes up to full strength and is ready for action.

Electrostatic Spraying—Its Technique and Merits

With electrostatic spraying, properly set up and operating efficiently, there is a real saving through a substantial reduction in the overspray enamel, part of which is carried away by the exhaust system. The paint coverage is of uniform controlled thickness. This is determined through trial runs to set specific standards. Proper viscosity of the enamel, of course, is important. The enamel is used much thinner than with hand spraying, since the atomizing and application air pressure is only 20-lbs., as compared to the usual 60 to 70-lbs. per square inch in hand spraying. Electrostatically deposited particles of paint don't "bounce" off the surface being painted; once there, they stay. The coating produced is of uniform thickness; no parts of the surface are sprayed too thick or too thin.

Other standards to be determined for each new item of production to be painted include the selection and positioning of spray guns, speed of conveyor, and atomizing pressure. A wide variety in sizes and shapes of parts can be successfully painted by electrostatic spraying.

In the setup under discussion the electrostatic field or coating zone is 4-ft. long (travel distance of products) and 4-ft. wide. The width here represents the distance between the vertical electrode structures which parallel the grounded conveyor. It is sufficiently high to accomodate the longest units now in production. Each electrode structure is composed of horizontal bars at the top and bottom, and between these bars six evenly-spaced ionizing wires are stretched. The electrode structure is maintained at a high static electrical potential by being connected to a voltage pack in the transformer room. The flexible conducting coil attached to the top bar carries the high voltage but very low amperage from the pack to the electrode system. An electrostatic field is thus established between the electrodes and grounded parts.

What Happens in the Electrostatic zone

When an atomized spray of enamel is discharged into this electrostatic field, the fine particles of enamel become charged to the same polarity as the electrode. This is opposite to the polarity of the parts to be coated, as they are carried on the grounded conveyor. Opposite polarity attraction causes the fine particles of enamel to rush to the part and deposit themselves on that area which is closest. Any particles of enamel that miss one surface, for instance, will be attracted to the next one behind. The atomizing pressure has been calculated and tested to spray the enamel particles from the gun nozzles at a velocity that will only carry them into the electrostatic field in proper position to become activated for further travel by the influence of the opposed polarities. Slow rotation of heater casings and the up-and-down movement of spray guns aids in producing a uniform distribution of enamel coating. Careful development tests are constantly being made to control and improve electrostatic application procedures and standards.

Adjusting the Enamel to Suit Weather Conditions

Due to variable weather conditions locally, it is necessary to adjust the type of thinners used

in the dilution of these baking enamels. On warm days, for example, the thinner used must have slower drying characteristics to allow the fine particles of enamel to adhere to the surface being painted while they are still in a moist condition. This adjusting is accomplished by blending into the paint different kinds of suitable solvents. Research work in the laboratory has been conducted to determine which solvents or blends of solvents work best under certain conditions.

By intelligent use of three selected thinners, the operator of the electrostatic spray can blend in the right thinner for use to meet prevailing conditions. For instance, on a cold rainy day, thinner TS-11 would be used, or if its drying time happened to be too fast, a small amount of TS-16 could be blended in. After the sprayer has obtained sufficient knowledge of the operation of the equipment, the blending of the paint becomes second nature.

The Los Angeles distributor for electrostatic spray equipment has an actual working set-up by which he can demonstrate the possibilities of the electrostatic spraying process for applying coatings to any given product. The concern does jobbing work on a variety of products ranging from large round flat pieces down to those made from fine wire—some as small as hairpins and special baby blanket clips.

Paint Sales Are Up

In the first five months of 1947 paint sales, in dollars and cents value, were 42% greater than in the corresponding months of 1946, according to the N. P. V. & L. Ass'n. Trade sales were up 36% and industrial sales were up 50¼%.

Interchemical Finishes in New Eastern Location

On and after July 14, 1947, Interchemical Corp., Finishes Division, will have Atlantic District headquarters for Sales and Purchasing at 57 State St., Newark 2, N. J.

In the modern 5-story brick and concrete building on this property will also be housed the Atlantic District Laboratories, as soon as the necessary physical facilities can be installed.

Through this consolidation of Sales, Purchasing and Technical Departments, there will now be housed under one roof the personnel responsible for servicing the Eastern accounts of the several units now comprising Interchemical Finishes, namely Ault & Wiborg, Murphy Finishes and Roxalin.

In addition, the administrative staff of Finishes Division of Interchemical, whose responsibilities are national in scope, have moved from the Empire State Building, New York, to the new State Street, Newark, address.

Dr. R. C. Gibson Advanced by Parker Rust Proof Co.

The Parker Rust Proof Co., Detroit, Mich., announces the promotion of Dr. R. C. Gibson from the position of Director of Research to that of Technical Director. Dr. Gibson is in complete charge of all laboratory, development, and pilot plant operations.

Dr. R. C. Gibson becomes technical director at Parker Rust Proof Co.

Dr. Grant C. Bailey formerly with the Research Department of a nationally known petroleum company, has been appointed manager of the Research Department. Mr. Gaillard W. Dell, formerly with an aluminum and brass company, has also joined the research staff of the Parker Rust Proof Co.

Sanding Suggestions for Finer Finishing

By ARTHUR P. SCHULZE

IN FABRICATING and finishing a wide variety of metal, wood, plastic and composition parts and products, smoothing the surfaces by sanding is being expedited by various mechanical means. The chief reasons for the trend toward more power sanding is the high cost, slow production, and nonuniformity of hand sanding. These factors have encouraged the development and refinement of lightweight, high-speed, easy-to-handle machines for sanding parts and completely assembled products before and during the finishing or protective coating process.

Less operator fatigue, lower costs, greater uniformity of finished products, and duplication of the best results previously obtained by tedious, time-consuming manual methods—these are but a few of the desirable features that portable power-driven sanders provide. It is these and other merits that account for so many different applications of this equipment.

During an experience of several years in designing, manufacturing and servicing portable sanding machines, leading manufacturers of this kind of equipment have studied and analyzed various mechanical sanding problems encountered by industry, and have made some interesting discoveries in that connection.

For one thing, it is evident that where speed of mechanical motion is sufficiently rapid, coarser grit abrasives than are practical with hand sanding may be used with marked success, thereby extending the life of the sandpaper and increasing its cutting efficiency. A careful balancing of moving parts in the machines and numerous other mechanical refinements help to prevent vibration. This, in turn, not only prolongs the life of the machines but it enables a skillful operator to move his machine over large areas freely and easily without leaving pressure marks or scratches.

Compressed Air and Electric Drives

Some makes of portable sanders are driven by compressed air which reaches the machine through a length of flexible hose that is connected to a convenient pipe line of compressed air. Somewhere in the compressed air pipe line—usually near the hose connection—the compressed air passes through a filter or trap that removes any oil or dirt or excess moisture. It also passes through an adjustable regulator which can be set to reduce the air pressure to what is safe for the hose and machine; and through an adjustable lubricator which releases so many drops of specified oil per minute to lubricate the air-driven machine.

Other portable sanding machines of the reciprocating-pad type are

driven electrically, taking their power through an extension cord which can be plugged into any electric light socket.

Wet Sanding; Special Sanding Pads Available

Some of the reciprocating-pad types of sanders that are driven by compressed air are adaptable to wet sanding as well as to dry sanding. This feature is desirable in some lines of metal finishing where the surfacer or "filler" coatings are wet sanded.

Numerous pad attachments make some of these portable machines readily adaptable to practically any sanding operation, regardless of whether the surface is large or small—or curved or flat.

For border work—sanding up close to beading or mouldings—some of the machines can be fitted with rigid flat pads faced with hard white felt. These pads are side pointed for clearance and they overhang the machine housing. With this kind of setup it is no problem for an operator to maintain level surfaces right up to the edges of trim and mouldings.

Sanding casket mouldings. Photo, courtesy Sundstrand Machine Tool Co.

Universal-type pads, some of which are a combination of oil-resistant mattress and air-type pad, are available for general sanding. They can be inflated to various degrees of hardness for a wide range of sanding. A pad of this type will follow the contour of gently curved surfaces. Flexible sandpaper pads made of spring steel and faced with either soft or hard felt have been developed for sanding other curved areas. Pads of various radii are available for various special sanding jobs.

Lubrication and Maintenance

The life of a sanding machine, like so many other types of equipment utilizing moving parts, depends to a considerable degree on two essential requisites—proper lubrication and adequate care. All machines that are driven by compressed air (pneumatic machines) must be protected by a filter for screening out moisture and dirt, and a pressure regulator.

The use of an automatic lubricator is recommended in connection with all pneumatic sanding machines. The automatic lubricator can be set to provide just the right amount of oil to assure best operating results, thereby avoiding excessive lubrication and its attendant possible run-over oil onto the work.

Brief Case Histories Show Merits of Portable Sanders

Indicative of the time savings and related economies resulting from proper use of portable sanding machines are the following

"Heck of a time to talk about Scientific Surface Preparation"

That's true! But scientific surface preparation before plating has much to do with the behavior of your equipment. If the rod is flexible and corrosion-resistant, if the reel is durable and smooth-running, your chances of landing the big ones are high.

Platers responsible for the finish on your tackle know these things. Through built-in quality workmanship they make good and sure that your rod and reel give you dependable performance when you need it most.

And that's why many platers call on specialized Oakite cleaning to assure the vital chemically clean surfaces on tackle parts before plating.

ASIDE TO PLATERS . . . any time you're up against a particularly troublesome plating problem call in Oakite. Or if you are anxious to trim your costs call Oakite. The chances are that practical Oakite in-shop cleaning-before-plating service will give you trouble-free, efficient production performance that will solve any problem that is likely to crop up. Consult Oakite today.

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MATERIALS
METHODS
SERVICE

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Specialized Industrial Cleaning

Sanding a bus body. Photo, courtesy of Detroit Surfacing Machine Co.

representative applications. From these actual "case histories" culled and condensed from a file of recent finishing shop experience, may be gleaned some suggestions which other finishers might find helpful in their own particular work.

Sanding Steel Surfaces. Prior to the application of protective and decorative coatings on steel surfaces, all surface irregularities must be removed or smoothed out. By using a suitable portable sander with large pad area, one firm quickly made a cost reduction of up to 50% in this work. Using No. 280 or No. 320 grit waterproof sandpaper, operators found that they could produce smooth level surfaces with a minimum of effort.

Sanding Castings. It is common practice among machine tool manufacturers to use surfacer and filler coatings to fill depressions and irregularities in the castings, and then sand these treated surfaces smooth and "level" before they receive their final finish. To smooth off these surfaces by hand is a difficult, tedious, time-consuming job; but by using a portable power sander, many firms are now netting economies in labor and materials that run as high as 45%.

For sanding the surfacer on castings, No. 80 grit abrasive paper is generally employed. In filler sanding, No. 80 grit abrasive is first used for a roughing operation, and then followed with No. 120 grit paper for the final smoothing job.

Sanding circular table rims. Photo, courtesy of Sterling Tool Products.

Cabinet Room Sanding. This operation prepares the foundation for a quality finish, therefore the wood surfaces must be leveled, and scratches, smudges and pressure marks that have accumulated during machining and assembly must be removed.

The speed and accuracy of surface-leveling by sanding depends

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Rubbing the finished bow front of a dresser drawer. Photo, courtesy of Sundstrand Machine Tool Company.

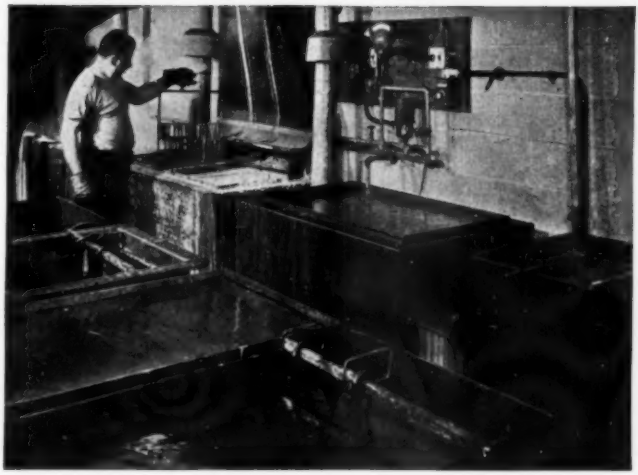
to some extent on the size of the sanding pads. For example, using one machine with No. 4/0 or No. 5/0 grit finishing abrasive, the total cutting area is about 50-sq. in. This provides an abrasive surface of double what is generally presented by hand blocks. Result: Efficiency of operation is increased as the cost is decreased from 50% to 70% over hand sanding.

Washcoat Sanding. In wood furniture and cabinet finishing a washcoat of thin shellac or lacquer sealer is often applied to seal the stain to the wood and to prevent any merging of the filler and stain which might cause a discoloration or muddy effect, and to "fix" any raised wood fibers for easy removal by subsequent sanding. Many finishing room foremen have found that the added pad area provided by certain portable machine sanders promotes maximum cutting efficiency and gives longer sandpaper life, thereby reducing the cost of this sanding by as much as 45%.

Sealer Sanding. As the preparatory coat for final finishing coats, a sealer coat must be lightly but thoroughly sanded to make it perfectly smooth. A successful combination for handling this job consists of a portable sander fitted with No. 5/0 (180) silicon-carbide open-coat abrasive, which is a grit coarser than can be used by hand. The coarser grit promotes faster cutting than would be possible otherwise, while the large abrading area of the machine sander provides the following specific merits: 1) elimination of pressure marks common to hand sanding; 2) maintenance of level surfaces, and 3) coverage of wider areas than would be possible with hand sanding. Added up, these benefits spell savings of over 50% in labor and material—sometimes as much as 65%.

Varnish and Lacquer Rubbing. Skillful rubbing of the last coat of finish on fine furniture and cabinets is what produces that satin-like luster and professional appearance which is so characteristic of a premium-grade finish.

A rubbed finish can be produced by hand rubbing with pumice and water or pumice and oil but, like hand sanding, it is slow and costly —and sometimes it is objectionable for other reasons. The cost of getting a rubbed finish has been cut as much as 50% in some factories through the use of portable sanding machines. According to average experience some excellent results are secured by using waterproof sandpaper in combina-



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tion with a 50/50 solution of rubbing oil and oleum spirits. This mixture is widely used because it remains moist during rubbing operations and it provides proper lubrication for the fine cutting action.

For a high luster finish, an oil sanding with No. 360-A abrasive is suggested, followed by light hand rubbing with a suitable compound. For a dull satin finish, rubbing with No. 320-A abrasive is advised, supplemented by a few hand strokes with burlap and fine pumice.

Plywood Aircraft Parts. After assembly, all plywood surfaces for airplane wings and stabilizers must be sanded smooth before finishing coats can be applied. The large flat areas of these parts are sanded smooth with a portable machine to which flexible and curved pad attachments are fitted for going over concave and convex surfaces. An aluminum open-coat abrasive paper is generally used for this work.

Portable power sanders are useful on another processing job in the aviation industry—the removal of scratches and discoloration from dural parts before anodizing. Maximum efficiency in this work prescribes No. 360 cloth-back aluminum-oxide with crude oil lubricant.

Wallboard Sanding. A primer coat followed by two coats of a finishing material comprise the usual finish for wallboard. The first and intermediate coats must be sanded to a perfectly level and smooth surface. All traces of orange peel effect must be removed to prevent blemishes and discoloring in the final finish.

As a general rule, these surfaces are wet sanded with No. 280-A or No. 320-A waterproof sandpaper and water. The operation is essentially the same as hand sanding, but the machine makes more than 3,000 strokes per minute, as against the average hand sanding speed of 150 strokes per minute. Also, the actual cutting area of the sanding pad is more than double that of a hand block.

Sanding aircraft wings. Photograph, courtesy of Sterling Tool Products.

Thanks to these factors, the sanding of wallboard is speeded up, costs for labor and materials are reduced by 50%, operator fatigue is minimized, and better quality work is produced.

Automobile Bodies. Various sanding operations on automobile bodies are performed with portable power-driven equipment. Using No. 280-A or No. 320-A waterproof abrasive paper, these machines have ample pad area and speed range to quickly condition large flat surfaces—and they can be fitted with flexible type pads for sanding curved surfaces.

In smoothing off soldered areas, the surplus solder is first cut away with a rasp or portable grinder; then the surface is dry sanded with No. 80 aluminum-oxide open-coat abrasive paper. It is easy to make the surfaces smooth and level. Compared to hand sanding, an improved finish is secured with con-

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siderably less manual labor, at a 60% saving in both time and material.

Large Heavy-Duty Machines for Rubbing

For rubbing large flat areas with pumice and water or pumice and oil, heavy-duty portable pneumatic machines that operate at the rate of 1100 strokes per minute are available. It is possible with such units to cover, in an equivalent period, double or even triple the area normally covered by hand rubbing. Typical applications of these units include rubbing the flat surfaces of tops and fronts on finished furniture and fine cabinet work.

In conclusion, it may be safely said that modern power sanding devices are successfully contributing to faster, better, easier, lower-cost production in many finishing departments and shops. Based upon these and other representative examples which could be cited, it is evident that these machines deserve further investigation by any concerns in search of ways to reduce the cost of smoothing surfaces before finishing and between finishing coats.

Hilo Held Industrial Sales Convention in June

Hilo Industrial Salesmen met at the Brooklyn Office on June 24th, 25th and 26th for a 3-day conference. Dr. Joseph J. Mattiello, Vice-President and Technical Director was General Chairman. He was assisted by Associate Technical Director, Mr. John H. Schumann. Many new and improved protective coatings were introduced and demonstrated.

President Carl J. Schumann in a talk to the group, expressed his opinion that protective coating prices had probably reached the peak and that some lowerings may be expected. However, there was nothing to indicate a heavy sudden break in prices. He said the buyer's market was here now—and keener competition.

A wrist-watch was presented to Ernest J. Johnson, salesman, who has completed 25 years with the company and became the 28th active member of the Hilo 25 Year Club.

First prize in a contest of spraying Hilo Hammerkraft was won by R. C. Savoye of Lexington, Mass., and second prize by R. H. Biendermann of Brooklyn.

At the end of the conference a dinner was held at the Holland House Tavern.

Many Years Service With Standard Varnish Works

According to news from Standard Varnish Wks., New York and Chicago, the concern employs 396 people and 53

Walter M. Barden (left) receives a watch from J. Heath Wood, president.

of them have been with the company more than 25 years.

Two of the company's Chicago industrial representatives, Walter M. Barden and Irving Netzky, are shown in the accompanying pictures, receiving watches as a token for 25 years of service from J. Heath Wood, President of the firm.

Irving Netzky also gets a watch from president of Standard Varnish Works.

Look for
LOWE BROTHERS FINISHES
at the Machine Tool Show!

This year's giant Machine Tool Show in Chicago, September 17-26, the greatest in history, will present vastly improved tools, processes, materials, and equipment.

This show will illustrate, too, the greatest progress that has been made in machine tool finishes and finishing methods. Pick out those exhibits which are outstanding in their finish and you will usually find the job was done with a Lowe Brothers product.

We are proud to know that a great part of the industry relies on the Lowe Brothers Machine Tool Finishes.

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Dayton, Ohio

30-Minute Fillers

A well informed finishing materials chemist reveals facts about new 30-minute fillers and quick-drying filler-stain combinations; and explains what procedure to follow to get satisfactory results with these wood-finishing materials.

BY ROLLIN H. WAMPLER

WITHIN the past five years a wholly new type of wood filler has appeared on the market. While it is called by many names, from various trade names to "synthetic" (although many older-type fillers were called "synthetic") perhaps the best designation for this product is "30-minute filler." I shall call it by that name because it is designed for coating with lacquer sealer in from 10 to 60 minutes after wiping, with no force-drying whatever required. Most suppliers recommend about thirty minutes.

The reader should not be misled by the name "synthetic filler." Many fast-drying fillers that air-dry for coating with sealer in four to eight hours, or force dry in 30 to 60 minutes at 125° F., have been called by that name. The older types of filler require from 15 to 48 hours air-drying before sealing, or one to two hours force-drying at 125° F.

The merits of a practical 30-minute filler are obvious. In full conveyor operations it means a shorter line and elimination of the oven customarily used for force-drying filler. In non-conveyorized furniture production it means great savings in space and time. Production is faster, less stock is tied up in the factory, and space requirements for finishing are reduced. In addition, these 30-minute fillers practically eliminate the old trouble with gray filler, which shows up occasionally.

Different Makes of Fillers Vary in Performance

Before proceeding, let me make it clear that 30-minute fillers from different suppliers vary greatly in their properties. Some have well-balanced working, filling, and non-shrinkage properties; others I have seen are not practical for production use. However, 30-minute fillers can be practical for use in almost any furniture factory. The point I am making is that 30-minute fillers are by no means as well standardized as are the older types of fillers, therefore all I shall say in the following paragraphs must be viewed in this light.

Some of these new fillers are supplied in liquid form ready for use. Most are supplied as heavy liquids or pastes, requiring reduction for use. Special thinners supplied by the manufacturers are required, although some few may be reduced with such readily available solvents as VM&P naphtha, xylol, and denatured alcohol. After reduction they are used just like any of the older type fillers, except that they may be coated soon after wiping. *(To page 50)*

An attractive corner of original James Mont design by Modern Mode Furniture Company, New York City

Inviting... and the "Finishing" Touch is Egyptian

When a finish of particular quality is desired it is natural to turn — as does Modern Mode Furniture Company — to Egyptian.

Whether your finish problem concerns graceful furniture, heavy machine tools, modern home appliances or whatever, you want more than mere surface protection... much more. Count on easy application, lasting good looks, enhanced salability, when the finish is Egyptian. Inquiry is invited.

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These 30-minute fillers seem to be suitable at any place where the older materials were used. When properly made, they wipe and clean well, fill well, and shrink very little. Adhesion over these materials is at least as good as over most of the older fillers. Surprisingly enough, "holdout" seems to be a trifle better over 30-minute fillers as compared to most older types.

Filler-Stain Combinations Are Available Too

Means have been found for combining non-grain-raising stains and 30-minute fillers to produce filler-stains that perform two operations at once. These materials have the clarity and color permanence of non-grain-raising stains, together with the fast-coating properties of 30-minute fillers. These filler-stains require special reducers supplied by the manufacturer, or they may be supplied ready for use. These filler-stains seem to be especially suitable for radio cabinet work, where speed is of the greatest importance. Local color control can be obtained by the use of lacquer shading stains.

In working with 30-minute fillers and filler-stains, it is of the utmost importance that the supplier's recommendations be followed as to reduction, type of reducer, drying time, etc.; for these products are carefully balanced. A little of the wrong type of reducer may easily spoil them. Above all, do not add anything to the product without the express approval of the supplier.

Most lacquer sealers will work well over these products, but occasionally a lacquer sealer will be found which will turn grey over these 30-minute fillers. In that event you will be wise to ask your regular supplier for a sealer adapted to the work, or use a sealer which your experiments show to be satisfactory.

Possible Filler Troubles, and Remedies for Them

What troubles should you look for in working with these new products? First, you should watch suspension qualities when reduced, wiping and cleanup properties, and odor (it should not be unduly strong or offensive). Many of the early 30-minute fillers were very difficult to wipe and clean up, but means of correcting this fault have been found.

One difficulty that might be encountered is poor flow of the sealer. In extreme cases the sealer may show a very pronounced rippled surface. The sealer appears, in such a case, to have pulled away from the pores.

Another thing to watch is swelling of the filler, or "filler-popping." If the filler or filler-stain is not made or used properly, the lacquer sealer may swell the filler to produce little ridges over the pore lines. The filler never shrinks back into place, and the ridges show up in the topcoats. Pinholing and excessive effort in rubbing may be the results.

These products also may slow down the setting time of the sealer, especially if coated in less than 30 minutes. In some cases the topcoats may seem to harden rather slowly. Printing and blooming of the film after rubbing may appear.

The filler-stains mentioned here may show bleeding into lacquer topcoats, especially the sealer. This is more likely to be the case if the sealer or lacquer coats are especially heavy.

Another thing to watch for is grain-raising. Some 30-minute

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fillers may contain enough hygroscopic (water-absorbing) solvents to attract moisture from the air on humid days and raise the wood grain.

Blistering when the finish enters the oven may be encountered on account of filler solvent still present in the pores. A slow warm-up period, or a zoned oven with low temperature at the point of entry will usually cure the trouble.

Use Fillers Properly and You Will be Okay

Lest the reader be scared of these new products by this recital of possible difficulties. let me hasten to state that these products are today being used successfully in many furniture factories, large and small. In many instances fewer difficulties are experienced with them than with the older types of products. Their record of performance is well established, both in the laboratory and in production.

In summary, use these 30-minute fillers and filler-tains only as directed. Use the solvent and allow the drying time specified by the supplier. Make sure the sealer is suited to this type of work, and apply only a thin coat. By following these simple principles you will be assured of success if you are using a good product.

A peek into the paint spraying room of the Kaiser-Frazer Corp. at Detroit, Mich. As car bodies move along by conveyor, in front of a sheet of falling water, masked workmen spray them with enamel.

Lupomatic Industries Takes Over L. Tumbling Machine Co.

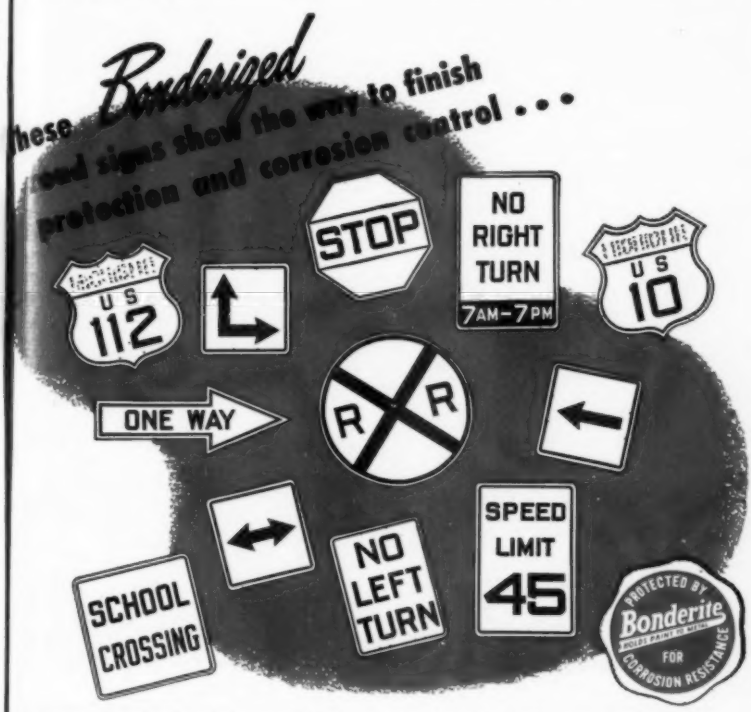
Lupomatic Industries, Inc., has been organized to take over the operations of the former Lupomatic Tumbling Machine Co., Inc., which was established in 1906. The offices and plant will remain at 4501 Bullard Ave., the Bronx, New York, N. Y. Charles W. Yerger, well known for many years in the plating and finishing field, is President and Treasurer. Joseph Lupo, who continues with the company as Vice President, will have charge of development and research. E. F. Helwig is Secretary.

The new firm plans an extensive expansion program with the introduction of new engineering features to improve and round out its previous line of equipment and supplies. It will continue to specialize in barrels for finishing and polishing, tumbling compounds and processes for the finishing of metals and plastics through tumbling. The expansion program includes the establishment of distributors throughout the country and an efficient administrative organization at the factory in an effort to improve service to the entire industry.

Liquid Tripoli Composition

The Hanson-Van Winkle-Munning Co., Matawan, N. J., announces four grades of a new liquid tripoli composition, Acme No. 2-L-70, 2-L-75, 2-L-77, and 2-L-79.

The company has also entered into an agreement with Eclipse Air Brush Co. for distribution of its equipment for the application of these liquid tripoli compositions, and is therefore prepared to supply complete installation and service.



Signs, hundreds of thousands of them, guide motorists along the highways that criss-cross the nation. Each sign, exposed through the seasons, is a weathering test in itself.

Many of these signs are Bonderized before painting. By actual experience, Bonderizing prolongs the service life by four or five times, saves money and materials for the departments using this standard corrosion-resistant paint base.

Be guided by these road and street signs to longer lasting fine finish. Find out how Bonderizing can protect and preserve the paint finish of *your* product. Bonderizing is positive, simple, easy to control, economical, and effective. Write today for full information.

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BONDERIZING PARKER PROCESSES Holds Paint to Metal
PARKERIZING PARKER PROCESSES Inhibits Rust
PARCO LUBRIZING Retards Wear on Friction Surfaces

derize, Parco, Parco Lubrize—Reg. U. S. Pat. Off.

I have been closely connected with and have been finishing plastic materials since 1939, during which time I have specified and controlled the finishing processes for hundreds of different parts. A great deal of the information outlined in this article has been gained the hard way, namely, through the cut-and-try method, and is accurate as well as completely new, in some instances, in the field of painting plastics.

It is my hope that the methods outlined will be a help to those manufacturers now in trouble, as well as a stepping stone in the advancement of the new fast-growing infant, Plastics.—

John F. Daymude

Painting OF FORMALDEHYDE Plastics

BY JOHN F. DAYMUDE

Ch. E. Consultant in Metal Finishing

THE LAST FEW years have brought forth tremendous advances in the plastics industry, advances that have made possible the use of plastics for hundreds of items previously made from ferrous and non-ferrous metals. Their extended use has presented many new problems to the industry not the least of which is the painting of plastics.

It is my intention to present a simple but constructive outline covering the painting of plastics. The information will cover certain plastic materials and their characteristics, some troubles experienced in their painting and finishing, and their correction, together with information about the handling of plastics—information that has been gathered from some years of actual experience and should therefore be of interest to both the experienced and inexperienced user.

The compounds listed in Table X are divided into two groups for the following reasons:

Group "A": This group is generally used where ease of molding, a smooth final finish, smaller sections, low impact requirements, and low cost of the raw material are combined to give a product of pleasing appearance—one which may or may not be painted. *(Cont'd. on page 56)*

Today's Bargain Finish!

Berry Brothers
RUFKAST
(WRINKLE)

If it's made of metal, Berry Brothers RUFKAST is the finish for it! And it's readily available.

RUFKAST fits right in with today's cost-reduction thinking.

- **Low in material cost**
- **1-coat operation**
- **Fast, low-cost production**

RUFKAST is a highly perfected wrinkle finish, uniform in pattern (large, medium or fine). One coat hides metal defects. Especially desirable for office appliances because it eliminates light reflections and eye glare.

Sample panels and further information may be had promptly on request.

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Group "B": This group of fabric and cord-filled plastics is used where high impact and physical strength are required. Due to the type of filler, the surface is necessarily rougher than Group "A", therefore it is harder to finish perfectly smooth.

Table No. 1 shows some general purpose compounds and some of their properties.

Bleeding and non-bleeding Plastic Formulations

At the present time there are no completely bleed-proof colored phenolic plastics other than some of the black plastics. Black phenolic plastics may or may not be non-bleeding.

When painting plastic materials that bleed, the dye will often bleed through the painted surface, causing an unsightly stain on the paint in any standard baking cycle or process. This means that after the plastic part is completely processed through the painting cycle, dye from the plastic may show through the final coat of paint and cause an unsightly blemish on the painted surface.

The bleeding through of dye on painted bleeder-type plastics may

PHENOL FORMALDEHYDE COMPOUNDS

Group "A"

No Filler
Mineral Filler
Woodflour Filler
Flock Filler

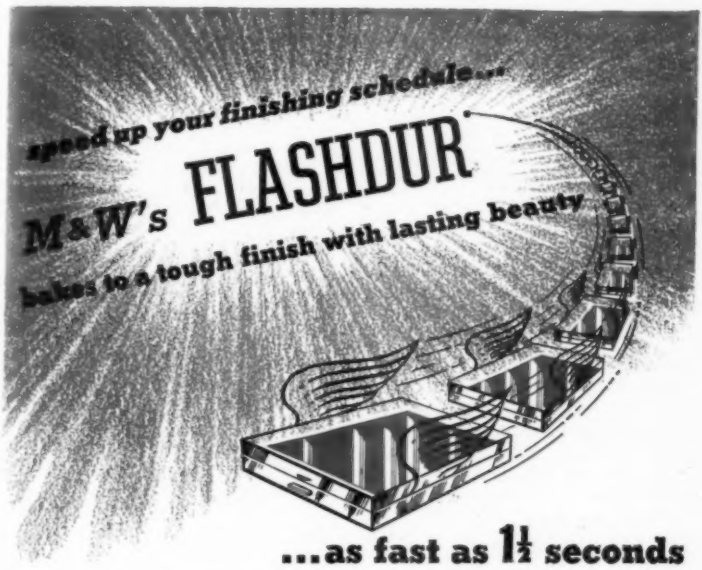
Group "B"

Macerated Fabric Filler — Cotton, Linen, Duck
Cord Filler — Cotton, Tire

Table X—Some plastic formulations for finishing.

TABLE 1—Phenol Formaldehyde Compounds

Properties	No Filler	Woodflour Filler	Mineral (mica) Filler	Macerated Fabric Filler
Molding Qualities	Fair	Excellent	Excellent	Excellent
Impact Strength	0.23 to 0.40	0.20 to 0.40	0.22 to 0.72	0.8 to 4.8
Resistance to Continuous Heat of	250° F.	250° F.	390° F.	230° F.
Softening Point	None	None	None	None
Water Absorption, 24 hrs. %	0.1 to 0.2	0.2 to 0.6	0.01 to 0.3	0.5 to 2.5
Burning Rate	Very low	Very low	Nil	Approx. Nil.
Effect of Age	None	None	None	None
Effect of Sunlight	Surface darkens slightly	Light shades will discolor		
Effect of Organic Solvents	None	None on Bleed-proof materials		
Effect of metal inserts	Inert	Inert	Inert	Inert
Machining Qualities	Fair	Fair to good		
Color Possibilities	Dark colors	Limited		



Baked-in beauty that assures your product not only winning eye-appeal but continuing customer satisfaction because of its durability, can now be obtained in a matter of seconds with M&W's newest development — Flashdur.

This new high heat, flash baking finish may be applied by either the spray or dip method . . . baked in Convection or Infra Red Ovens, Strip or Induction Heaters. It is also suited for conveyorized automatic application. Available as a clear finish and in most colors, Flashdur is the ideal finish for compacts, lipstick cases, lighters, instruments and numerous other metal products.

For complete information on Flashdur, write for Technical Data Bulletin 116 and the Standard color card. And don't forget, an M&W technical consultant is always available to discuss your requirements with you privately on any finishing question you may have.

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. . . where industry goes with finishing problems

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not show up immediately. The dye may bleed out within any time up to 12 months, depending upon where the part is used or how it is used, therefore it is always best to use a non-bleeding plastic where the part must be painted.

When, after using a bleeding-type material for some time with complete freedom from bleeding, the part made from the same plastic starts to show bleeding, it is suggested that a check be made as to the degree of cure on the plastic, because plastic not fully cured will show excessive bleeding at times.

Painting and Sealing Bleeding Plastics

There is now on the market a primer* that will do an excellent job of sealing off the bleeding dye from bleeder plastics. With the correct use of this primer, bleeder plastics that show no bleeding just out of the final baking operation are unlikely to bleed later.

In those instances where a firm uses the primer-sealer referred to, and still has a small percentage of bleeders just after the final painting operation, the cause could be in the curing of the plastic. (Also, see "Causes of Poor Paint Adhesion," further along in this article.)

To repair these bleeders, sand off all paint around the bleeding area, place the sanded part in an oven for about 20 hours at 250° to 265° F., and then reprime and refinish the part. If this does not stop the bleeding, the part may have to be salvaged.

To my knowledge, the only non-bleeding colored plastics are black, produced by the use of carbon black as the pigment instead of one of the conventional dyes.

*The author will pass on this information, if and when consulted.

Identification of Bleeding And Non-bleeding Plastics

An accurate test to separate bleeding from non-bleeding plastics is the following:

1) From a section which, in the molding operation, has had the least pressure, file off with a fine file some of the plastic material and place in a test tube. Note: The test tubes must be of clear glass and of the same size.

2) Add a standard amount of acetone to each test tube with the sample, shake the test tube or tubes for about two minutes, and let the test sample settle to the bottom of the tube.

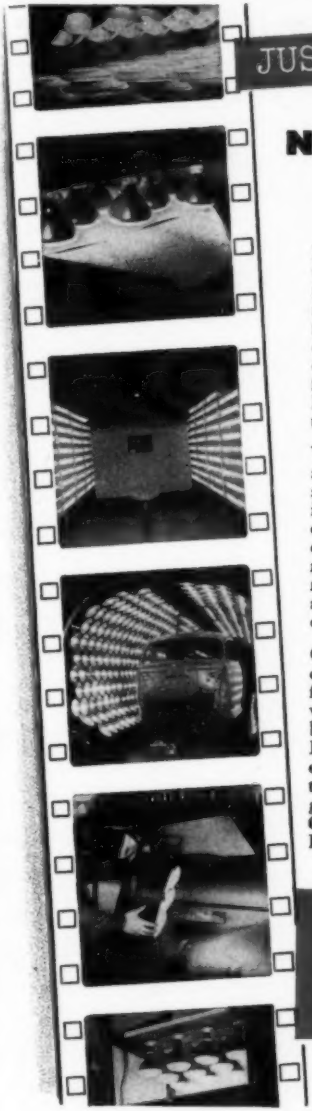
3) If the plastic is of the bleeder type, there will be some slight discoloration in the clear acetone layer above the settled-out filings. This discoloration will be the dye from the plastics.

The Painting of Plastics; Baking Temperatures

Referring to groups "A" and "B," as listed in Table X, unless otherwise specified, the following information as to time and baking heat should be followed:

For baking enamels or any baked finish, the schedules of one hour at 255° F., or 45 minutes at 265° F. represent the maximum time and temperature, with a cooling period between each succeeding bake at the recommended schedules. In ordering paints, this information should be kept in mind, and paint suppliers should be so notified in order that their paint may meet these recommended painting schedules.

Group "B" Special. There will be times when the Group "B" plastics cannot be baked over 150° to 200° F., because of natural oils in the cord or fabric fillers. (See reference "L" under "Causes of Poor Paint Adhesion.") [*to p. 60*]



JUST RELEASED:

NEW G-E SOUND SLIDE FILM ON INFRARED

Don't miss this interesting 30-minute picture story! General Electric's brand new full-color sound slide film explains the many advantages of infrared lamp ovens for baking, preheating, dehydrating, curing and drying. It gives you the facts you need to size up Infrared as a production tool for *your* plant.

You'll learn how Infrared works—and see how infrared ovens are being used successfully to dry chinaware, bake finishes, skin-dry molds, preheat plastics, etc. And you'll get a quick education on infrared equipment, and how radiant energy can be adapted to various production schemes.

Call your nearby General Electric Lamp office or your electric utility today and find out when this unique sound slide film will be shown in your area. And remember—for best results with Infrared, consult a recognized oven manufacturer, and make *sure* you get G-E infrared lamps. General Electric Co., Nela Park, Cleveland 12, Ohio.

G-E LAMPS

GENERAL ELECTRIC

Causes of Poor Paint Adhesion To a Plastic Surface and...

(Groups "A" and "B")

A) Molding lubricants.

B) Improper cleaning methods.

C) Improperly cured plastics (under-cured.)

D) Improper handling of cleaned parts between the cleaning operation and the spray department.

E) Careless handling of cleaned parts in the spray department.

F) Wrong paint (finish coat).

G) Oven temperature too low for the type of paint being used.

H) Too short a baking time.

I) Wrong type of primer.

J) Finish coat not adhering to the primer.

K) Primer and finish coat not adhering to the plastic.

(Group "B" Special)

L) Oil. Natural oils in the filler coming to the surface of the plastic in baking will cause poor paint adhesion.

Corrections for Those "Causes"; Remedial Recommendations

A) Molding lubricants must be completely removed from plastics before painting. (See "B" which follows).

B) Proper cleaning methods for plastics include the following: 1) Vapor degreasing by materials having a vaporizing temperature between 166° and 192° F. 2) Solvent washing, using solvents in the following manner:

Equipment: Three washing tanks equipped with proper fire safety covers. Air source of approximately 90-lbs.; air hose with ⅛-in. nozzle opening. Hooding where toxic solvents are used.

Operation Cycle: Place the clean solvent to be used in this particular solvent washing operation in each of three properly equipped safety tanks, numbering the tanks 1, 2, and 3 consecutively. Start washing the parts in tank No. 1, using a large clean paint brush or other suitable mechanical aid. Note: If inflammable solvents are used, be sure that the washing aids, paint brushes, etc., have no ferrous metal that can come in contact with a steel tank.

After washing the parts in tank No. 1, rinse well in tanks No. 2 and 3. After completing the washing and rinsing operations, drain the parts well; if they contain blind or small holes that do not lend themselves to free drainage, use the high-pressure air hose to remove all traces of washing solvent. In case carbon tetrachloride, trichloroethylene or equivalent materals are used as the washing solvent, it is absolutely essential that all traces of the solvent material be removed. Otherwise, their carrying over into the bake oven will cause checking and crystallizing of the surface finish on all paint in the oven.

C) Improperly cured plastics (under-cured) will often cause poor adhesion, and the following is suggested:

1) Check degree of cure, using acetone extraction method (See ASTM Test D494-41); if the test indicates an under-cured plastic, notify the molder.

2) Have your drawings or specifications indicate exactly what is wanted on the molded or formed part.

3) Set up analysis standards to indicate the amount of cure on the part from the molders; also any other tests necessary for control of the molded product. Note: All tests must be made on the part before any processing has begun.

D) Properly cleaned parts for painting must be kept free of con-

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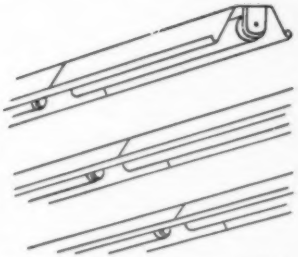

A well-known manufacturer of lighting fixtures has used drums and drums of these Hilo Lacquers during the past half dozen years. In war-time, mile after mile of his fixtures, finished with these lacquers, were used in war plants. Now his fixtures are being installed in stores, offices, warehouses and public buildings—and he *still* continues to use HILO No. 2 WHITE and GRAY LACQUERS.

These lacquers are sprayed on the hot rolled steel shells of the fixtures—one coat of white on the reflector surface; one coat of gray on the back and accessories. Reduced 1 part of lacquer to 1 part of LL Lacquer Thinner, they produce a smooth, hard, semi-gloss finish. They dry amazingly fast . . . *one hour* after spraying, the fixtures are ready to be cartoned.

Send for free samples of Hilo No. 2 White or No. 2 Gray Lacquers for test in your plant.

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tamination from all matter foreign to the clean surface. Among other things the operator must use clean canvas gloves when handling the cleaned parts. Clean carrier equipment should be used to convey the cleaned parts from the cleaning operation to the spray department. Cleaned parts should be further protected from foreign matter by adequate covering or covers.

E) Spray operators must use proper care in their handling of the cleaned parts so as to keep them clean. Where the use of tack rags is necessary, the cause of their use should be determined and then eliminated if possible.

F) Improperly formulated paint should be and can be eliminated by giving suppliers the correct information as to your baking times and temperatures, base material to be finished, and what cleaning methods you intend to use. In other words, tell your suppliers how long the paint will be baked and at what temperatures, plus all other pertinent information, and let them (the paint suppliers) formulate the proper paint for the job in hand.

Test the sample paints to eliminate those that do not meet your requirements. The finish coat hardness should be specified as F to 2H, using Eberhard-Faber pencils for test equipment.

Paint should conform to either of the following baking times and temperatures:

1) Bake one hour at 255° F. average; maximum temperature 260° F.

2) Bake 45 minutes at 265° F. average; maximum temperature 270° F., unless otherwise specified.

G) If, as under "F" (above) the paint has been tested and approved, and for some reason the oven heat has been lowered, you may expect to have failure in adhesion and hardness, and the final color may not match your color standard. The answer to these failures then is in your own plant and you must make corrections.

If, as under "F" (above) the paint has been tested and approved and no changes have been made in the processing, baking time or temperature, and the paint is not hard enough, the trouble may be in the paint. If poor adhesion, color, etc., occurs, the paint may still be at fault or the cause may be as noted under "C" (above).

A good suggestion to follow, at all times when trouble occurs, is to check the complete process before naming the cause of failure of the painted surface.

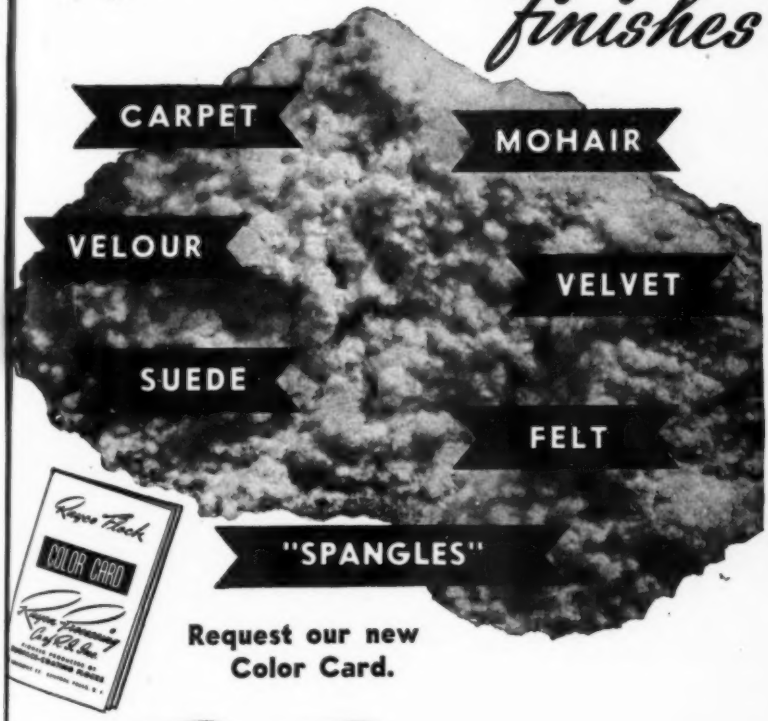
H) If, as under "F" (above) the paint has been tested and approved under one baking schedule and the baking time is shortened, failures may occur. Should this be the case, then return to the proper baking schedule or, if the part must be baked in a shorter time cycle, either compensate for the time change by increasing the temperature (where the plastic will stand the increased heat) or have the paint reformulated to meet the new schedule.

I) Where the priming of the plastic surface is really necessary, proceed as follows: Choose the primer as under "F," being sure that the finish coat material will work well over the primer chosen. Otherwise, adhesion troubles may crop up again.

J) When the finish coat does not adhere to the primer, and if the primer has been approved, as under "I" (above), then proceed as follows:

1) Check the temperature and time at which the primer is being

Rayco Flock synthetic finishes



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processed. If there are any changes, make proper corrections.

2) Check the handling of the primed surface. Is the surface being kept clean? If not, make the proper changes.

3) See if the solvent of the finish coat is attacking or softening the properly baked primer surface. Then see if the solvent has been changed in the finish coat. If the solvent has been changed, this may be the cause of the trouble or failure.

4) Failures sometimes occur between primer and top coat when the time interval between coats is too long. Finish coats should be applied within 24 hours where possible, keeping in mind that the primed coat must be kept clean at all times.

K) Improperly baked (over-baked or under-baked) primer; solvent changes in the primer; solvent changes in the top coat; over-baked top coat; improperly cleaned part as under "B" (above); improperly cured plastic as under "C" (above)—any of these will cause the paint coating to show poor or no adhesion, as will a bad batch of primer.

L) When a Group "B" plastic formulation (see Table X) is painted, trouble sometimes develops in the standard baking schedules because natural oils that are in some of the filler material will be forced to the surface of the plastic in the 255° F. oven heat.

There are no cheap corrective measures to remove these natural oils from the fillers, but there are methods of finishing the plastics other than by using a baking type of finish. The following is one that is known to give good results:

The first major change is lowering the drying heat to not more than 200° F. for no more than a 20-minute bake. A heat of 150° F. may be used for any indefinite time. This schedule necessitates a major change in the type of paint to be used.

Next, a sealer of the type of a good zinc chromate primer* will be almost mandatory where forced drying of the finish is necessary or will be employed. After the chromate sealer coat has been applied, the following coats may be either one or more coats of a primer surfacer and an air-drying top coat; or a top coat only may be applied. The amounts of the primer surfacer used will depend on the condition of the molded plastic or the smoothness of the final finish required.

All coats may be force dried at 150° F. for any length of time.

Again, let me emphasize the importance of testing all paint and paint combinations under the methods and on the surfaces on which they will be employed in production. One cannot be too careful of this item where a well-finished and well-made product is sold to a beauty-conscious and practical-minded public.

Notes on Cleaning Plastics Before Painting

1) When degreasing plastics, never allow the contamination of the degreasing solvent to get beyond 18% before either changing or redistilling the solvent. Never allow the degreasing solvent to become acid. Otherwise, adhesion of the paint to the plastic will be poor and this condition will cause the metallic parts of the degreaser itself to rust through. Place a ½ to 1-lb. cloth bag of soda ash in the degreasing solvent—not in the vapor of the degreaser—and keep it there all of the time. This

*The author will pass on this information, if and when consulted.

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The new Rx-5 co-polymer finish will provide a fine protective coating for your product. Rx-5 is chemically resistant and is based on a thermo-plastic, non-oxidizing resin. It is non-toxic, ages without oxidizing or becoming brittle and dries by evaporation.

Rx-5 Coatings for Metal

In addition to the chemical resistance qualities, Rx-5 finishes for metal provide good adhesion, excellent flexibility, and a tough, mar-resisting film. Drying can be accomplished either by baking or air-drying and can be controlled so that it requires less than ten minutes. It can be sprayed, dipped or brushed.

A special zinc chromate type of primer has been formulated to be used in the Rx-5 metal system.

The Rx-5 finish is available in white, black and six colors.

There is a wide variety of uses for this great new finish. We invite your inquiries about specific applications. If you will include full details our engineering department can determine your exact need.

ACTUAL PROOF OF CHEMICAL RESISTANCE

The Rx-5 co-polymer finish was stringently tested for chemical resistance. Films of Rx-5 .0025 inches in thickness were immersed for six months in the following reagents:

3% Acetic Acid
10% Sulphuric Acid
10% Hydrochloric Acid
10% Nitric Acid
29% Ammonium Hydroxide
10% Sodium Hydroxide
Mineral Oil
Vegetable Oil

At the end of this six months' test Rx-5 was found to be completely *unaffected.*

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will eliminate 95% of your chances of having an acid condition in the degreasing equipment.

2) When washing with solvent, do not allow the solutions to become too dirty (see B2). When the solvent in tank No. 1 becomes dirty (not too dirty), remove the solution and replace it with the solution from tank No. 2; then replace the solution in No. 2 tank with the solution from tank No. 3; then place clean solution in the No. 3 tank. In this way you should get the most "mileage" out of your cleaning solutions. Do not throw away the dirty solution, as it can be reclaimed either by yourself or by the manufacturer or blender of the washing solvent, at low cost.

3) Do not use alkali (washing) cleaning methods for plastics without full knowledge of the dangers involved in this type of cleaning. Phenol formaldehyde plastics are not resistant to alkali. See your handbook or charts covering physical properties of plastics.

Oven Heat and Baking Time for Painted Plastics

Do not allow the oven heat to vary too much; plus or minus 6° F. should be the maximum variation. Where excessive changes in oven heat and baking time must be made, make complete tests of the paint over the plastic surface to find out if these changes will cause trouble, either to the paint film or the plastic. Do not bake either the Group "A" or Group "B" plastics above the following baking schedules:

1) One hour at more than 255° F. average temperature; or 260° F. peak temperature.

2) Forty-five minutes at more than 265° F. average temperature; or 270° F. peak temperature.

Miscellaneous Remarks on Cleaning, Painting, Baking

Make no major changes in your process or materials without complete knowledge as to what these changes will do either to production or the finished product.

In most production troubles, you will find the cause in your own backyard. It may be either an accumulation of don'ts or lack of sufficient knowledge of how your product will act under some of the "don'ts" mentioned in this article.

It is to one's advantage to observe, understand and use what is absorbed intelligently before becoming too frightened at conditions or things that happen every day to the individual personally, or to his work.

Outline of Specifications For Painting Plastics

Two outline specifications for applying the finish coat of a baking material and a special primer to a phenol formaldehyde plastic are as follows:

Finish Coat: Specification No.____.

Title: Oil-Modified Synthetic Enamel (baking-type paint).

Scope: This specification concerns the application of the final baking finish to a phenolic plastic material, as under Groups "A" and "B" in Table X.

Applicable to: Primer or unprimed plastics and all ferrous and nonferrous materals.

Appearance: Should be smooth and the color as per standard color control sample.

Equipment: Standard spraying equipment.

Brief Outline of Operations

a) Apply finish coat over either the clean primed or unprimed surface by spraying.

b) Bake. *(Cont'd page 71)*

Materials Used

a) Finish coat is to be material of tested and approved paint cut to spraying viscosity and controlled by using the standard Ford cup or equivalent equipment.
b) Solvent. Use solvent as specified by the paint supplier.

Procedure

a) Apply a normal coat of the properly reduced paint to the clean primed or unprimed surface by spraying.
b) Bake the resulting coat for one hour at 255° F. or 45 minutes at 265° F. to full hardness.

General Requirements

a) The finish coat must never be applied over a dirty surface or over a primer that is not compatible with the finish coat.
b) The thickness of finish coat should be 0.0013 to 0.0018-in. unless otherwise specified.
c) Hardness of the finish coat should be between F and 2H pencil hardness.

Workmanship

To meet set standards.

Rejection

Finished part not meeting this specification, plus set standards, shall be subject to rejection.

Specification on Primer Coat

Title: Special primer* (baked).
Scope: This specification concerns the application of a special primer to a plastic surface to specifically seal off dye bleeding through succeeding baked finishing coats.
Applicable to: Specifically for application over bleeder-type plastics. May be used on all ferrous or non-ferrous materials.
Appearance: The finish must be smooth, and color as specified.
Equipment: Standard spray equipment.

Brief Outline of Operations

a) Carefully clean the surface for priming. Degrease or solvent wash.
b) Spray one heavy coat of the primer on clean base material (plastic). Spray one light coat of primer on clean base material other than plastic.
c) Bake.

Materials Used

a) Primer cut with the least amount of solvent to spray a smooth, non-webbing film.
b) Solvent. Use special solvent made specifically for this primer.

Procedure

a) Prepare surface of base material as in B1 or B2 (under "Causes of Poor Paint Adhesion . . .").
b) Apply a heavy smooth coat of the properly reduced primer by spraying.
c) Bake the resulting coat for one hour at 255° F., or 45 minutes at 265° F. to full hardness.

General Requirements

a) The primer should be applied over the properly cleaned base surface after the least possible interval between cleaning and painting.
b) When parts are handled before or after priming, care must be taken to remove finger prints and dirt contamination.
c) The thickness of the baked one-coat film should be the greatest obtainable with this special primer (on plastic). The thickness of the baked one-coat

*The author will pass on this information, if and when solicited.

film should be about 0.0005-in. on base materials other than plastic.

d) Baked film should have a pencil hardness from F to 2H.

Workmanship

To meet set standards.

Rejection

Primed parts not meeting this specification, plus set standards, shall be subject to rejection.

Comments: The information contained in this article has been compiled from a number of years of experience by the author in the plastics finishing field, as well as the finishing of other base materials, and the opinions expressed here are his own.

DeVilbiss to Build New Canadian Plant

The DeVilbiss Co., Toledo, Ohio, will soon break ground for the first unit of its new Canadian plant intended to better supply the heavy demand for spray booths throughout the Dominion of Canada. The new structure will be occupied entirely with what it takes to manufacture spray painting exhaust systems, including numerous new spray booth developments. DeVilbiss also has a plant in Windsor where spray guns, air compressors and atomizers are manufactured.

American Society of Body Engineers Convention

The American Society of Body Engineers, Inc., will hold its Annual Convention on November 5th, 6th and 7th, 1947 at the Rackham Memorial Bldg., Detroit, Mich.

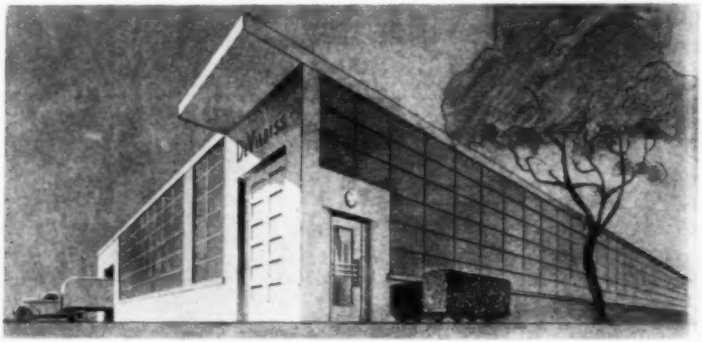
Speakers for the eight general sessions are all lined up to cover new trends in styling, production engineering, small cars, seating comfort, truck bodies, buses and coaches, materials in body construction and passenger car body engineering.

More Plastics Coming

The United States plastics industry will continue its phenomenal growth for at least another five years, according to Dr. N. N. Samaras, director of research for Monsanto Chemical Company's Plastics Division at Springfield, Mass.

Greatly accelerated research in the plastics field during the past eight years has been of considerable influence in the tremendous growth of the industry during that time, he pointed out, saying: "We can estimate that at least $50 million has been spent in the United States on synthetic resin research since 1939, and the number of technically trained specialists engaged in this field has probably trebled in the last eight years."

This research emphasis will have a continuing effect on the industry whose future growth, according to Samaras, is based on development of blends of plastics, mechanical alteration of existing materials, innovations in mass production techniques, greater supplies of raw material, and pioneering of plastics research in the field of carbon, silicon, sulfur, phosphorous and nitrogen types.



DESPATCH 3-Compartment Oven Provides New FLEXIBILITY in Finish Baking Production

"FLEXIBILITY is the most important feature in the oven we need," said Maysteel Products, Inc. At our new Sheboygan plant we want an oven adapted to baking synthetic enamel on cabinet work and other sheet metal pieces.

This DESPATCH 3-compartment, gas-fired, rack type oven answered Maysteel's problem. Given a phosphate treatment and a coat of enamel, the metal sheets are baked at 250-300°F. for half an hour.

Each compartment has a 1,000,000 BTU DESPATCH heater and DESPATCH 10,860 cfm hi-volume fan. Oven has maximum capacity of 900°F. for greater flexibility. Each section can be used as a separate oven, baking 3 kinds of pieces at one time. This flexibility fits in exactly with Maysteel's requirements.

DESPATCH Advantages

Greater Output...100% convection heat and up to 75% recirculated air permit speedy heat-up, fast heat recovery and faster baking.

Better Baking... heavy duty fans give hi-volume heat transfer, assuring uniform, high quality baking. Automatic controls keep temperature constant

Economical Operation... efficient gas or oil-fired heaters cut fuel costs . . . convenient handling saves time . . . compactness saves floorspace.

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by JOE VARGA

Finishing MUSICAL INSTRUMENTS

MASS PRODUCTION has become common procedure in many of our industries, but it has only approached the outer fringe in the art of producing musical instruments. It is doubtful if intricate conveyors and forced drying systems will ever replace the time honored yet modernized methods now used. The nature of the product, it's construction, artistry, and tone requirements form the basis for this opinion.

One of the chief construction differences between stringed instruments and say, for instance, furniture is that these instruments are made from solid wood and single thickness veneers, whereas most furniture now is built of laminated woods. The body of stringed instruments is generally made of ⅛-in. mahogany, spruce, maple or birch, depending upon the type of instrument and its price class.

In finishing laminated panels that have 1/28-in. or 1/30-in. face veneers, any penetrating finishes are definitely stopped at the glue line. However, when finishing solid veneer bodies we must use sealer coats to control absorption of the basic finish coats.

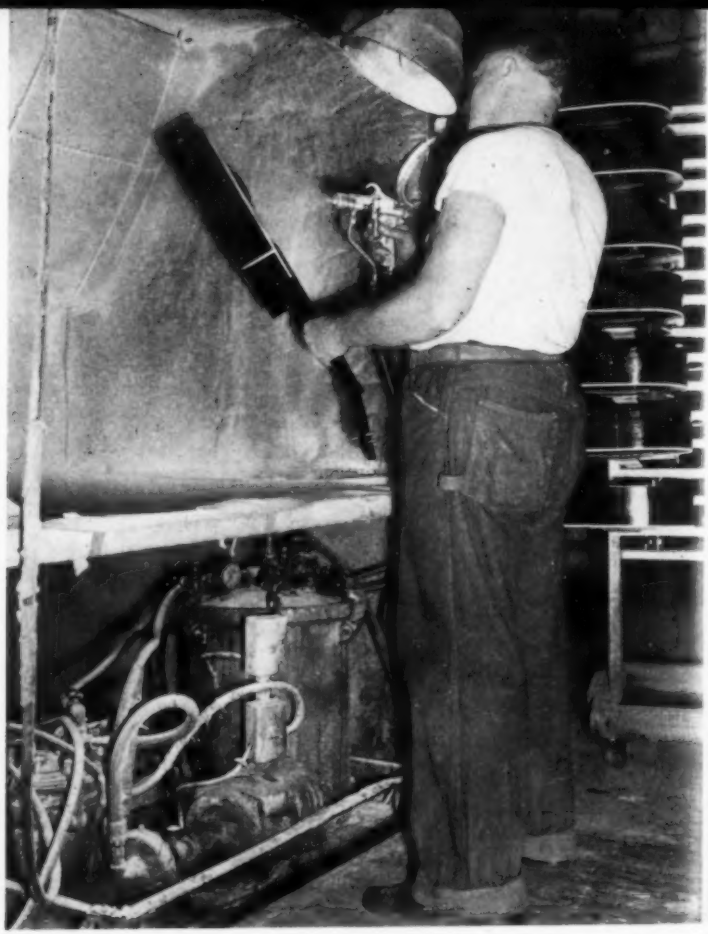
Foreman of The Harmony Co., Chicago, describes complete finishing methods used on wood guitars, mandolins, ukeleles.

For the purpose of this article, let us consider a mahogany finish, a maple finish, and an enamel finish on guitars. Regardless of the type of instrument—guitars, mandolins, ukelelas, and their variants—finish procedure would be the same.

Finishing Mahogany Guitars

Mahogany guitars, which frequently have spruce tops or "sounding boards," are given a thorough inspection upon arrival in the finishing room. Then they are sanded with No. 3/0 sandpaper. The sanded surfaces are blown clean with a compressed air gun

Loading and aligning a guitar. Note clamp on neck handle which holds the body firmly.



Spraying hot lacquer. Notice the tank, circulating pump and electric heater under the booth. Heavy coats are successfully applied by this method.

and given a spray coat of clear lacquer sealer. After a drying period of about four hours, another sanding with No. 4/0 sandpaper follows; then the surface is wiped clean and a brush coat of oil-base filler is applied. The filler is padded in, wiped off and allowed to dry 24 hours. A second coat of lacquer sealer is sprayed on and, after a 4-hour drying period, the surface is sanded with No. 4/0 sandpaper.

Now the guitar is ready for shading, followed by the first heavy coat of hot lacquer. This lacquer is formulated with 28% to 30% solids and is sprayed at 145° to 150° F. Pressure on the tank is maintained at 40-lbs., with

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Pedigree Finishes have been developed from a distinguished lineage dating back almost 100 years. From the days when varnish makers carried their valuable formulas "under their hats" and guarded them as precious secrets — to the present day, when thousands of special formulas are ready to meet your most critical specifications, Pedigree has led the "Blue Ribbon" class.

There's a superior Pedigree product to meet your every finishing requirement — and Pedigree Technicians to help solve your most difficult finishing problems.

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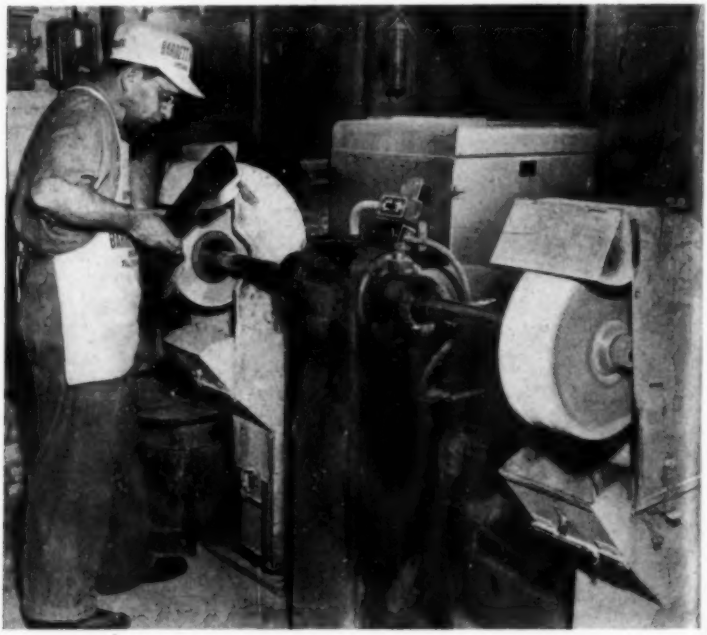
55-lbs. air pressure at the gun. A rotary pump with a by-pass keeps the hot lacquer in constant circulation. Temperature is thermostatically controlled. This coat of lacquer is air dried for 24 hours. Then a second heavy coat is applied and again it is allowed to dry for 24 hours.

The guitar is then wet sanded, using No. 320 wet-or-dry sandpaper. A portable air-driven sander is used on all flat surfaces. Edges and curved surfaces are hand sanded.

After a thorough cleaning, the guitar is buffed on a 16-in. cotton buffing wheel, operating at a spindle speed of 900-rpm., using a soft buffing compound as a mild cutting agent. The final polishing is done with a dry wheel of the same diameter and spindle speed.

Three separators are used on each of the buffing wheels. This makes a "softer" wheel and, as a consequence, creates less heat. This is highly important, for if intense heat is generated in either buffing or polishing it would have a tendency to soften the lacquer, some of which would then be picked up by the revolving wheel. The burned lacquer would harden and scratch the surface of the instrument. For the same reason it



One of the buffing and polishing units. At left an instrument is being buffed. Polishing wheel is at right. This treatment produces a mirror-like finish.

You are asking for the best . . . when you say "Improved Clinco Synthetic Enamels." Try it and you will testify to its superior quality.

WRITE TODAY FOR ADDED INFORMATION

Let us help you solve any particular problems you may face where quality finishes will help. Write and let us tell you the complete story of Clinco Finishes which are formulated by our staff of expert chemists and technicians for application on any surface.

EVERY FINISHING MATERIAL TO FINISH ANY ITEM
FURNITURE LACQUERS WRINKLE FINISHES
CLEAR AND PIGMENTED METAL LACQUERS

THE CLINTON COMPANY 1210 ELSTON AVENUE CHICAGO 22, ILLINOIS

is necessary to wet sand the surface before buffing and polishing. If this were not done, necessarily heavy pressure against the buffing wheel would develop enough heat to melt some of the lacquer which would be picked up by the wheel, with fatal results to the finish. The use of hot lacquers has been a great factor in developing improved methods of polishing at reasonable costs.

Finishing Maple Guitars; Adding Decorative Effects

The maple finish is essentially the same as the mahogany—that is, insofar as inspection, hand sanding with No. 3/0 sandpaper, cleaning and the spray coating of lacquer sealer which is subsequently sanded with No. 4/0 sandpaper. At this point maple guitars are given a spray coat of shading stain or pigmented lacquer which forms the base color. Certain portions of the back, front and edges, which are to be highlighted, may be given a curly cross grain effect. This is done by artistically spraying a dark stain or pigmented lacquer to produce special patterns or effects. When this coating becomes dry the instrument is shaded, again using a shading stain or pigmented lacquer, followed by a spray coat of clear flat lacquer. This coating is allowed to air dry for six hours.

A single stripe down the center of the back, and edge stripes may be applied by means of a mechanical striper. Then the neck of the guitar is assembled and the glue is allowed to dry for eight hours. The final operation is a spray coat of either flat or gloss lacquer, depending upon the character of finish desired.

Edge striping an enamel finished guitar before the neck is assembled. The consistency of lacquer in any mechanical striper must be just right to produce a sharp, clean-cut line.

Methods Used for the Enamel Finish

Then there are the birch or maple instruments which will receive an enamel finish. These are inspected, sanded, given a spray coat of lacquer sealer and again sanded. This is followed with a coat of pigmented lacquer enamel which is allowed to air dry six hours. The back and edge stripes are applied. After the stripes dry the necks are assembled. Some of these instruments require a colorful design on the face. The designs are stencil-applied at this point. Final operation is a spray coat of either flat or gloss lacquer.

On those instruments where necks are run through separate from the body until just before the final finish is applied, the necks receive the same finishing operations as the bodies, up to the time of assembly. *(To page 82)*

SAVE TIME WITH RED X

FUSION TYPE FINISHES

Go from raw wood to finish coat in about an hour without the application of heat . . .

. . . and that's only one of the many important advantages now possible through Red-X Fusion Type Finishes . . . Production costs are also reduced thru substantial savings in floor space, equipment, heating and labor costs . . . all these advantages without sacrificing quality.

With Red-X you can recoat immediately, or at any subsequent time. Each application from stain to final coat fuses with preceding or succeeding application . . . resulting in better color clarity and uniformity . . . more fullness and body . . . less shrinkage and swelling . . . greater toughness and durability.

Complete details in this free booklet. Write Reliance, 915 E. Kentucky St., Louisville 4, Ky.

Rely on Reliance

RELIANCE
Varnish Company, Inc.
LOUISVILLE, KY. • CHICAGO, ILL.

Instead of the painted stripe effect which is used on low priced instruments, the higher quality instruments have bound edges of marquetry inlaid between white celluloid bands. During finishing operations the marquetry is masked for protection. Just prior to the final lacquer coat, the masking tape is removed and the celluloid bands are scraped so that through the top coat these bands will be a gleaming white. Every instrument, in its final stages of finishing, passes through the hands of an inspector, for touch-up work and cleaning, to insure a finished product satisfactory to the ultimate user and player.

"Daylight" Color Paints Developed

A series of interior "daylight" paint colors, designed to lessen eye fatigue in industrial office workers, is a development of the Libbey-Owens-Ford Glass Co. The glass company will not produce the paint but has made them available to paint manufacturers.

The colors, originated by H. Creston Doner, director of the design department of the company, comprise four off-shades of white scientifically formulated to reduce glare from direct and reflected light. At Libbey-Owens-Ford, the colors are currently being applied to plants in four states in a $500,000 repainting operation.

The paint colors were first worked out during the war as a means of easing the eye strain of employees engaged in inspecting small pieces of precision glass then in production by the company. Fully 90% of the eye complaints were eliminated when the daylight colors were applied to interior walls.

The color shades have been standardized by spectrophotometer records and can be furnished by any paint manufacturer. At least two manufacturers have already begun production of the paints.

Four standard shades for factory use have been developed; one for upper walls and ceilings to reduce glare and eliminate after-images when eyes are turned away from a window; one for machinery above the eye level; one for wainscoting and all wall areas at eye level, and one for machinery and traffic lanes below eye level.

Suggested Schedule for Novelty Furniture

By William B. Lell

SINCE THE END of the war and the lifting of lumber controls, the manufacture of various items of novelty furniture has shown a decided increase. One of the problems in this industry is to give a quality finish to the product and still maintain a production cost that is in keeping with a low-selling price.

First of all, the success to all finishing depends on a good sanding job. No matter how good a finishing job is attempted or what material is used, a quality finish cannot be obtained unless the product is first sanded smoothly.

The initial operation in finishing the item is staining. Often this can be done quickly and effectively by dipping, wherein the product is dipped either by hand or by means of a conveyor. An oil stain, cut at a ratio of two or three gallons of naphtha to one gallon of stain, can be used. Several companies now make non-grain-raising stains that require little or no wiping after the item is dipped. Twenty or 30 items may be dipped at the same time, or one or more after another, and set on a drainboard with little or no wiping required.

The drainboard should be so set up that excess stain drains off the end of the table and by means of a metal trough the residue flows back into the tank. The items can be placed in racks for drying or, if a conveyor system is used, they may be hung on conveyor hooks and moved along to the next operation—a sealer spray.

The drying time of the stain, depending on the type of stain used,

A peek into the finishing room of United Stove Co., Ypsilanti, Mich., where a workman is spraying black primer on metal parts which are hanging from an overhead chain conveyor. Enamel containing Acryloid resin is applied when the base coat is dry. The Acryloids are made from acrylic resins.

should not be less than 30 minutes nor longer than one hour.

Spraying a sealer coat is the next operation. This is an important one in that a heavy coat of a good grade sealer should be used because the sealer not only sets the stain but it forms the base for the coating of top lacquer which finishes off the product. The sealer should be allowed to dry from 30 to 45 minutes. Then the surface is rubbed down smooth with a fine grade of steelwool, removing all rough spots.

At this point the product is ready for the final coat of lacquer.

(Continued on page 84)

If the wood is clear, with a minimum of "wood spots," a 27% (solids) clear lacquer may be sprayed on as a topcoat. If the lumber has light and dark streaks, or is inclined to be spotty, a shading lacquer should be used to even out the finish and cover up any off color deficiencies in the wood. After half an hour of normal air-drying, the product is then ready for packing and shipment.

The complete cycle of finishing with this method should take not more than three hours and, if the finishing coats are properly applied, this schedule will give a high quality finish at a minimum cost to the manufacturer.

Grand Rapids Varnish Corp. Expands its Facilities

The Grand Rapids Varnish Corp., Grand Rapids, Mich., has completed a $500,000 building for laboratories and research and finishing studios, designed to increase the corporation's facilities and equipment for developing finishes for wood and metals.

The new unit, located opposite the manufacturing buildings of the corporation, was completed in July and opened for inspection of furniture buyers at the Grand Rapids Furniture Market by Howard C. Lawrence, president and general manager.

Also included in the program are the following: a third-story addition to the firm's large enamel plant; a new concrete structure for receiving, shipping and storage; a boiler plant and steam distribution system, and a new building for cleaning returnable drums. General offices of the corporation have been included in the new building which houses laboratories and finishing studios.

These additions have increased production facilities of the plant about 50% and have brought the firm's investment in buildings and equipment to a total in excess of $1,000,000.

The new "service" building is L-shaped and consists of two stories and basement with 143-ft. frontage on one-street and 86-ft. frontage on another. The basement and first floor are of reinforced concrete. The second floor is concrete on a steel frame structure with the exterior of brick and cut stone trim; windows are of glass block extending across the face of the building. The building is air conditioned, radiant heated and has 22,685-sq. ft. of working area.

The laboratory and studio are designed only for the promotion and development of the firm's products. The laboratories, occupying the south leg of the building, are distinct from

(Continued on page 89)

The Grand Rapids Varnish Corporation's postwar expansion program has been completed with the erection of facilities numbered in the above picture. No. 1 is the firm's new "service building," housing finishing studios, offices and research laboratories. Building No. 2 is for the reconditioning of steel drums; No. 3 is the firm's power plant; No. 4 is a shipping, receiving and storage building, and No. 5 is a third-story addition to the former 2-story enamel plant.

the manufacturing laboratories located in older sections of the plant and will be used only for research. The studios incorporate the latest techniques in finishing metal and wood and also have modern, strikingly-decorated display rooms.

Major part of the firm's production is devoted to the making of industrial finishing materials. In 1946 the corporation manufactured 1,700,000 gallons of industrial finishes for use by manufacturers. This compared with 300,000 gallons of finishing products for the private-label trade.

A few of the principal categories on which the firm's products are used are furniture, radios and pianos, refrigerators, washing machines and other household appliances and equipment for automotive and aircraft products.

Arco Opens New Laboratory for Organic Coating Research

To meet modern industry's increasing demands for specialized production finishes, to spur development of new, improved protective-decorative organic coatings and to effect improvements in existing paint, lacquer, enamel and varnish products, The Arco Co., Cleveland, Ohio, announces completion of a new research laboratory building.

In making the announcement, Howard E. Wise, president of the Cleveland concern, explained that "it has been developed and designed expressly to assist manufacturers the nation over in their efforts to get better product-coating results for their finishing materials' dollar."

The laboratory is fully equipped with more than 37 different testing devices and allied accessory apparatus —for producing a wide range of scientific analyses essential to product development, quality improvement and production control. It is staffed by a group of experienced paint technicians and organic chemists headed by Dr. Eugene W. Kanning, Director of Research.

The laboratory is housed in a modern 2-story structure of steel frame and concrete construction and provides a functional floor area of 9150-sq. ft. It consists of four acoustically - conditioned, incandescent - illuminated laboratories, each about 48x36-ft. in size, two on each floor, with offices and library in the central portion of the building. The building provides extensive facilities for development and evaluation of organic coatings, resin research, pilot-plant production of new synthetic resins, and accelerated testing under controlled temperature conditions of finishes taken from the regular Arco production line or materials still in the development stage. Special equipment rooms adjoin the laboratories.

This resin research department on the ground floor of The Arco Company's new research laboratory provides complete facilities for the examination and study of phenolic, alkyd and other synthetic resins from the flask stage up through pilot plant production.

Letters from Readers

Spray Painter Likes I. F.

In INDUSTRIAL FINISHING for June 1947 I notice, on page 122, a booklet offered by Bradley Paint Engineers, Inc. Inasmuch as copies can be secured from you, this is to request a copy.

As a recent subscriber I find your monthly magazine highly useful in making one a better paint sprayer, which happens to be my occupation.

In the interest of good spray painting I wonder if you could send me tear sheets of "Spray Painting" by Floyd Cohagan, that appeared in your July 1946 issue. I would also like if possible, to get a copy of "Synthetic Enamel Versus Lacquer" by Dale W. Musselman, which apneared in January 1947 issue.—M. Travers.

Wood and Marble Reproductions

Would it be possible for you to forward further information regarding "Rare Figured Wood and Marble Reproductions" as mentioned in your article in May issue of INDUSTRIAL FINISHING, page 124?—J. B. Mfg. Co. (Cabinets), England.

We are sending you a tear sheet of an advertisement of the Meyercord Co., 5323 W. Lake St., Chicago 44, Ill., from the June 1947 issue of INDUSTRIAL FINISHING Magazine. For further information about rare figured wood and marble reproductions, we suggest that you communicate directly with The Meyercord Co.—ED.

A Tip on Sanding, Mr. Burk

Mr. J. B. Burk: Your feature article in the July issue of INDUSTRIAL FINISHING was very interesting and timely in this age of conveyorizing. However, I noticed one thing which may have been an oversight on your part. You mention using wet-or-dry sandpaper No. 360 in connection with the use of naphtha and oil. You realize that this type of paper is costly, Mr. Burk. You could use the standard No. 360 sandpaper, without the waterproof quality, at a great saving over a period of time. Call in your supplier and I feel sure he will substantiate this.—N. J. Leimetter.

Why "Table Tops Split"

Referring to a published letter on this subject in June 1947 issue, page 88, the P. Mfg. Co. should consult their oldest cabinet maker about their trouble. I am sure he will give the right answer. If the wood is sealed right, the only trouble lies in the jointing operation or in the under fastenings.—Emery Csulak.

Want Flock-Coated Paper in India

As one of the numerous subscribers to your excellent publication, I have gained much, and the fee paid is more than justified.

The April issue, which has just arrived, has a published letter from D. & S. Processing Co., Clifton, N. J., regarding flocks. I have been looking for such a firm and enclose a letter addressed to them, which I hope you will kindly forward to the correct address.

I will be pleased to receive complete particulars, samples, prices and expected delivery of rolls of paper coated with flock.—P. K. Ghosh, Calcutta, India.

Mir-A-Tex Finish

WIRE COLLECT NAME AND ADDRESS MANUFACTURER OF MIR-A-TEX FINISH THAT YOU DESCRIBE IN ARTICLE PAGE 44 OF FEBRUARY 1946 ISSUE.—F. Co.

Retel, Mir-A-Tex finish is a product of Berry Bros., Detroit.—ED.

Durable Stencil Paint for Fabrics

I receive INDUSTRIAL FINISHING every month and I find it very helpful in many ways. I am not what would be termed an industrial paint engineer; anyway, your magazine is of considerable help to railroaders in solving tough problems.

We have several thousand cloth headrests which go on the backs of passenger car seats. We would like to silk-screen a special design on this fabric. We have tried dye thickened with dextrin. After screening we

Next to the Pershing tank, the rhino has the toughest hide in history. And that wicked-looking horn is really made of hair, cemented together by cells.

If your surface coating problem calls for toughness and versatility, use lacquer. It's rhinoceros-tough, easy to apply, durable, fast-drying, and attractive. Your lacquer supplier would like to tell you about it in more detail.

Hard Hitting Hair-do

CSC makes solvents and plasticizers, but is not a lacquer manufacturer.

COMMERCIAL SOLVENTS Corporation

steam out, with an electric iron, as much of the dextrin as will come out by this system. The result is unsatisfactory, being pale in color and washing out after a few trips to a laundry. The dye we use is called Rit. The color is scarlet. Any bright red color would be satisfactory.

If you have any information or suggestions, I would be pleased to hear from you at your earliest convenience.

The screen reproduces the design perfectly. The only trouble is as I have stated above.—R.I.F. (Paint Department).

In a letter we are giving you the names of several manufacturers of silk screen materials, and suggest that you write one or more of them explaining the type of material and the design you wish to apply on the cloth. It may be that silk screen process paint will stand up under laundering better than dye.—ASSOCIATE ED.

High Solids Lacquer Sealers

In the June issue of this magazine, I was interested in reference to an article entitled, "Fallacy of High Solids in Lacquer Sealers," by Rollin H. Wampler. If possible I would like to get a copy of this article.—P. D.

Mr. Wampler's article appeared in Oct. 1944 issue of this magazine, pages 82, 84 and 86. We happen to have an old copy and are sending you tear sheets of the article.—ED.

Flow Coating Equipment

Will you please give some information on flow coating and where I can procure equipment for same? The article to be coated is a flat piece of perforated steel.—T. & B.

Try Spraying Systems Co., 4023 W. Lake St., Chicago, Ill.—Ed.

Dry Room Design Wanted

I am interested in obtaining any information available regarding expediency in dry-room construction. I intend to convert a storage room into a drying room and must consider such factors as humidity, ventilation, etc. Please send me cuts of appropriate articles in INDUSTRIAL FINISHING and/or refer me to alternative sources. —R. W. Chair Co.

I don't recall that we have published any articles in INDUSTRIAL FINISHING that would help you very much in planning a drying room. Really, this is a job for a heating and ventilating engineer—if you want something that will be efficient, economical and satisfactory. In a letter we are referring you to firms and engineers who can probably help you.—ED.

"Vegetable Paint"?

I want to buy a small can of "Vegetable Paint" to paint a baby's play pen. Can you please tell me where I can get it?—C. R.

We do not know of any "vegetable paint" but are sending you names and addresses of several manufacturers of safe paints and enamels for toys and juvenile playthings.—ED.

Silicone Finishes

In the June 1947 issue of INDUSTRIAL FINISHING Magazine we noticed on pages 134 and 135, an article on "Silicone Finishes." The writer of this article reported that there were a number of new finishes available which could withstand temperatures of 1500° to 2000° F.

Could we have whatever is available concerning these finishes or, if possible, the names of the manufacturers who produce them?—M. Gas Co.

There may be several concerns making these finishes, but the only one we know of at the moment is Midland Industrial Finishes Co., Waukegan, Ill.—ED.

Portable Rubbing Machines

Will you kindly furnish us with the names and addresses of manufacturers of portable power rubbing machines, both air and electric?—S. Furniture Co.

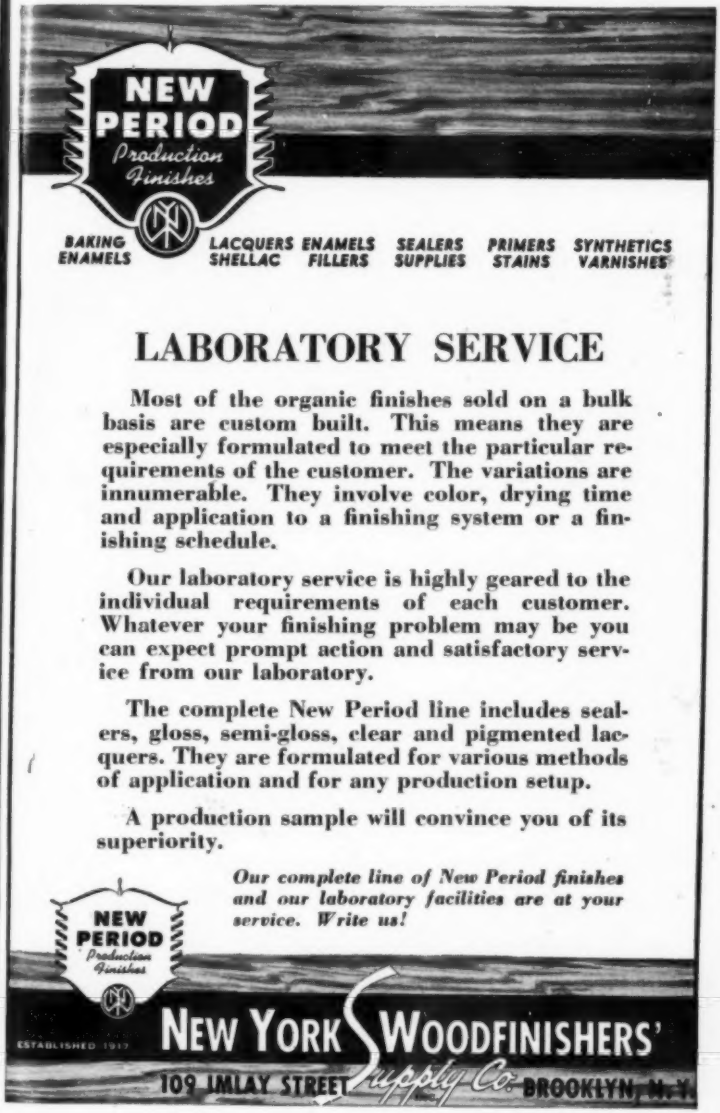
Look through Industrial Finishing's advertising pages. The three leading manufacturers of these machines all advertise in this magazine—sometimes every month; sometimes every other month.—ED.

Finish for Dogwood Shuttles

We would appreciate any help you could give us on the following problem, which we have received from a loom manufacturer. If you can suggest a coating applicable to this company's requirements, your letter will be sent directly to them.

"This laboratory is making a study of the various types of materials that would be suitable as a coating or finish on persimmon and dogwood shuttles. The prime requisites of a coating of this kind are wear and moisture resistance.

"We are particularly interested in


NEW PERIOD
Production Finishes
BAKING ENAMELS
LACQUERS SHELLAC
ENAMELS FILLERS
SEALERS SUPPLIES
PRIMERS STAINS
SYNTHETICS VARNISHES
LABORATORY SERVICE
Most of the organic finishes sold on a bulk basis are custom built. This means they are especially formulated to meet the particular requirements of the customer. The variations are innumerable. They involve color, drying time and application to a finishing system or a finishing schedule.
Our laboratory service is highly geared to the individual requirements of each customer. Whatever your finishing problem may be you can expect prompt action and satisfactory service from our laboratory.
The complete New Period line includes sealers, gloss, semi-gloss, clear and pigmented lacquers. They are formulated for various methods of application and for any production setup.
A production sample will convince you of its superiority.
Our complete line of New Period finishes and our laboratory facilities are at your service. Write us!
NEW PERIOD
Production Finishes
ESTABLISHED 1917
NEW YORK WOODFINISHERS' Supply Co. Inc.
109 IMLAY STREET BROOKLYN, N. Y.

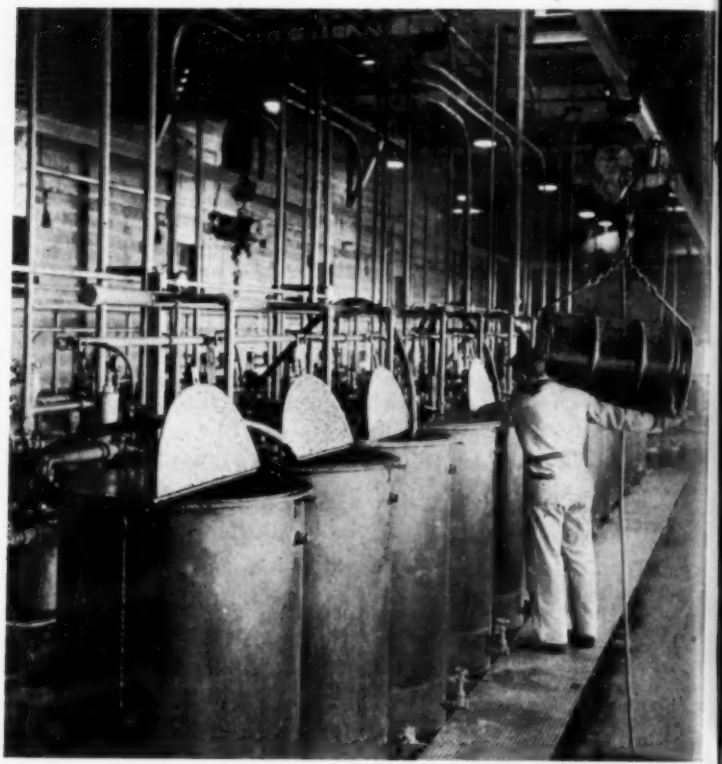
moisture resistance in order to prevent warpage of the shuttle, when a wet filling is employed."—Library of Industrial Research.

We believe that a penetrating sealer in one or two or more applications, supplemented perhaps with a coat of spar varnish would be satisfactory. Several concerns can supply these materials. In a letter we are submitting the names and addresses of some of them.—ED.

Sprayed Plated Finish

We should appreciate your advising us who the manufacturer is that makes a sprayed plated finish. We are interested in a spray that will look like chrome and also nickel plate finish. —R. R. & Co.

Perhaps you have in mind "Platelustre," a product of Maas & Waldstein Co. who advertises in this magazine.—ED.



Here Acryloid resin enamel is being sprayed onto stove parts with hand guns in this water-wash spray booth. These finishes retain their original bright color, are proof against fumes, grease and alkali. Photograph was taken in the plant of United Stove Co., Ypsilanti, Mich.

INDUSTRIAL FINISHES

Lacquers
Varnishes
Enamels
Stains
Fillers

JONES-DABNEY

Since 1919

LOUISVILLE, KENTUCKY

RESINS AND GRINDING LIQUIDS

"Syntex" Alkyds
Grinding Liquids
Varnishes
Special Resins

JONES-DABNEY CO.
DIVISION OF DEVOE & RAYNOLDS CO., INC.
Factories at
LOUISVILLE - NEWARK - DETROIT

Questions and Answers

Finishing Those Hitches

The July I. F. just came in today and, as usual, I turned first to the Question and Answer section—on Page 96, this time. The item "Finishing Hitches" and your answer thereto prompt me to request the floor.

If, as is usually the case with such items, the hitches are sold to trailer manufacturers, any permanent finish the hitch manufacturer puts on will probably not match with what the trailer builder uses. Why not give them a treatment that will protect them against (imminent) corrosion; say, for instance, Parkerizing, Bonderizing, or any of the other recognized rust-preventive coatings? Any of these will be neutral to the finish the trailer manufacturer will apply, and will provide clean metal for at least a year under ordinary stock storage conditions.

If some finish is deemed necessary on account of the rather dull appearance of the coatings I have just mentioned, why not clean the metal thoroughly with a good chemical cleaner and then paint with an aluminum paint. This is a good prime coat for almost anything the trailer manufacturer might want to coat over. Also it will serve in case retail sales are made to individuals who are building their own trailers.

Unless the hitch manufacturer makes other articles which can be plated effectively (and profitably) the cost of installing and maintaining a plating department for the hitches alone will be higher than any of the plans I have suggested. Unless a plating department is well insulated from other departments of the plant, it is apt to be more trouble than it is worth; through tramp fumes, acid carried on the shoes of workers, and the odor which sometimes rises from the vats.

Unless the hitch manufacturer turns out the hitches in large volume, I believe it would be profitable for him to investigate the possibility of having his plating done by some shop that specializes on such work—assuming, of course, that plating is the desired finish.

On any finishing other than painting by hand, it would be necessary to provide some protection to keep bright and uncoated the ball-and-socket or other bearing surface of the hitch, as otherwise wear would develop in road service, and hitch soon become annoyingly noisy.—ELTON STERRETT.

Inside Camera Finish

Looking over July issue. I noticed an inquiry in the "Letters from Readers" (page 94) regarding paint for cameras, from W. H. Co.

We have a material of this type and we are furnishing it to some of the largest camera manufacturing companies in this country. It is called "P1. Primer." While this line of material was developed for the U. S. Navy, to be used on galvanized metals, it has proved

Decorative and protective finishes—highly praised because they "give a lift" to the product for which they are specially developed — originate in our modern Creative Studio.

Whether you manufacture graceful furniture worth hundreds of dollars, or produce children's toys that sell for but a few pennies makes no difference . . . we have the equipment and know-how so necessary in conceiving an exclusive coating that will meet with your most exacting specifications.

If you are not entirely satisfied with the finish you are now using, take advantage of the special service we offer. Reputable firms are invited to have samples coated at no cost or obligation.

No Tampering with Quality

ROCKFORD VARNISH *Company*
ROCKFORD, ILLINOIS

Manufacturers of Protective and Decorative Coatings

to be ideal for the insides of cameras due to the fact that it is non-light-reflecting and will adhere to any surface. It is of a synthetic nature and will dry so it can be handled in three minutes. It can be recoated with most any type of finish, if necessary, such as lacquer, synthetic or oil finishes, and it will stand a 400° F. bake. It is not harmed by temperatures as low as 80° below zero, nor is it affected in any way by water.

I am sending you a small sample which I cut from one of my sample panels. I may add that this material has stood a 400-hour test on cold-rolled steel, in a 20% salt solution spray, without showing any evidence of rusting. It can be brushed or sprayed.—F. J. LINDIG (Representative for Barker Chemical Co.)

To Spray Bleaching Material

Will you please advise us where we can purchase a gun that will resist alkalines used in spraying bleaching materials?—G. S. Co.

Write the spray gun manufacturers you see advertising in this magazine. Quoting from Edwin Hogstrom's feature article, "Bleached Finishes," in Feb., 1946 issue of this magazine:

"Bleaching mixtures can be sprayed over the wood instead of being wiped on with a wet cloth or sponge, and spraying will prove to be just as efficient. In fact, spraying is more convenient where a large number of pieces are to be bleached. However, some precautions must be taken when spraying these mixtures. The spray gun will have to be fitted with a special fluid tip.

For cup guns, a special suction tube will have to be used, and the material container will have to be a glass jar instead of the usual aluminum cup.

Small pressure tanks can be used if the inside of the tank and the material pipe are lined with glass or treated with a coating that is resistant to acids and alkali solutions. Precautions must be taken to prevent any bare metal from making contact with the bleaching solution."

To Restore Aged Finish On Antique Furniture

I would greatly appreciate your advice on the following finishing problem:

On old or antique furniture, where the finish is old and dark, can the finish be restored or revitalized? I do not want to remove the finish down to the wood, but wish to keep the old finish and secure a semi-gloss. I want to keep the "aged" appearance without its dullness and crazing. I will appreciate your advice.—R.

Checks and crazing may be removed by skillful use of denatured alcohol. First, procure a 2-in. or 3-in. flat Fitch brush and dip it into alcohol; remove the excess alcohol by rubbing bristles across top edge of container. The brush is now ready to apply to surface. Stroke with the grain of the wood until varnish softens and knits together again. The brush should be dipped repeatedly into alcohol and applied to surface, as an excess of alcohol will lift the finish and make a refinished job necessary.

Small areas should be treated and brushed the full length of panel. Doors, drawer fronts, posts,

PYRO-CELLO-FILM

• *The Amazing Wood Finish That Protects and Beautifies*

GIVE IT THE FINGERNAIL TEST

Pyro-Cello-Film is exceptionally scratch resistant. . . . Requires 8 lbs. of standard divided carborundum to wear through the finish.

Pyro-Cello-Film was developed to meet the finishing requirements of manufacturers whose products require a permanent "COAT OF PROTECTION" . . . A finish that, with only average care, will retain its lustrous, new appearance through years of usage and wear.

SUPERIOR ALCOHOL AND ACID RESISTANCE
HIGHLY HEAT RESISTANT
IMPERVIOUS TO FATS AND GREASES
NOT HARMED BY SALINE SOLUTIONS
EXCEPTIONALLY MOISTURE RESISTANT

SUPERIORITY UNIFORMITY PYRO-CELLO-FILM THE AMERICAN VARNISH COMPANY • CHICAGO 22, ILLINOIS ESTABLISHED 1905

Laboratory tested and proven in use, the sensational, new PYRO-CELLO-FILM protects and enhances all woods and wood veneers . . . is impervious to the mars, scratches, grease and solutions that are so harmful to ordinary wood finishes. PYRO-CELLO-FILM, an exclusive product of the American Varnish Company, is now available to a limited number of quality manufacturers of fine wood products.

THE American VARNISH CO.
1126-40 NORTH BRANCH ST. CHICAGO 22, ILLINOIS

WRITE, WIRE OR PHONE *Today...*
for complete information about PYRO-CELLO-FILM and its application to your wood products.

ends and tops should be treated separately. Alcohol will have a tendency to gloss the finish and will probably leave a few brush marks, but this condition may be overcome by rubbing the treated surface with fine wet-or-dry sandpaper and a wax-type emulsion rubbing oil.

I have rejuvenated a lot of old furniture by this method. If you understand finishing a little you should have very little trouble in producing a first-class job.—FRED BOYNTON.

I have two suggestions for restoring or revitalizing the finish on old or antique furniture:

1) The use of paste wax will preserve the old finish and give it a semi-gloss appearance. The wax can only be used to advantage however, when there is sufficient film of the finish on the wood to form a base for the wax.

2) If the old finish is pretty well gone, or in other words if it has worn thin, my suggestion would be to spray a very, very thin coat of white shellac over the entire surface. It might require a little experimenting to determine just how much to cut the shellac, but off hand I would imagine that about three parts alcohol and one part 4-lb. cut shellac would be about right. The idea is to add just enough solid film to the finish to serve as a base for applying paste wax.—RAYMOND C. ADAMS.

Repairing, Restoring and Finishing Antiques

I HAVE been a close reader of this magazine for the past six years. but do not remember of ever seeing an article dealing with finishing and restoring antiques. Today, more than ever, this profession has become a major business which involves a lot of people. It includes private collectors, dealers and thousands of people who just make a hobby of this type of work. The hard work and the headaches that go into putting some of these pieces into usable or salable shape—this falls to the finisher.

Most of the old pieces—especially Pennsylvania Dutch—were originally hand painted; some with floral designs of great beauty; others with a striped effect of blues and golds. With the passing years these pieces, handed down from generation to generation, have suffered different fates. Many were relegated to dark attics and cellars. Some were destroyed as being useless, while others received more loving care, so to speak.

From a finisher's angle, a lot of these pieces would have been better off if they hadn't received so much "care." It seems to be typical of the American housewife to change the color scheme of her furnishings whenever house-cleaning time rolls around, and many of these old pieces came in for more than their share of numerous coats of various colored paints.

Now that these pieces are being reclaimed (and many of them are really valuable) finishers are being called upon to restore them to their original beauty.

An experienced and alert antique finisher can usually tell by the period and design of a piece whether or not it has been hand decorated. He must use extreme caution in removing the several coats of paint that have been applied over the original finish so as to avoid spoiling or altering the original design. This requires

MOST

Western Furniture Manufacturers are Fuller customers

W. P. FULLER & CO.
Industrial Finishes Division
San Francisco 19, California

Leading 1947
Western Furniture Markets

LOS ANGELES
FURNITURE MARKET
July 28-August 2, 1947

SAN FRANCISCO
WESTERN SUMMER MARKET
August 4-9, 1947

Of all Western Exhibitors at these two Furniture Markets, users of FULLER INDUSTRIAL FINISHES show the following majorities:—

Western Manufacturers by furniture types	FULLER CUSTOMERS Number of Exhibitors	Percentage of Exhibitors
BEDROOM	14 out of 21	66.6%
DINING ROOM	9 out of 12	75.0
EARLY AMERICAN	3 out of 4	75.0
EARLY CALIFORNIAN	4 out of 5	80.0
MODERN	8 out of 11	72.7

FULLER *Industrial* FINISHES

Products of **FULLER-NASON** *Researc*

a lot of patient, hard work, but many times the results are well worthwhile.

It has been my experience that instead of using a paint or varnish remover which peels off all the finish, it is best to use a lacquer thinner and take off a coat at a time. Then, when you finally get down to the original finish, practically all that you have to do is to touch up and blend in spots that have been worn, and recoat same with varnish or flat lacquer which should be rubbed to a satin finish. Then the restored piece is ready to lend beauty and charm to some nook in a study or library.

There are some fine old pieces that fell into the hands of the handy man of the house. Many of these pieces, fragile to begin with, were patched and nailed (and I mean nailed). I've seen beautiful pieces with huge eight or ten penny nails driven through the top and through the posts of table legs. This presents another problem to the finisher. These nails must be removed and the holes must be plugged. I find that plastic wood is much better than putty for this work. It takes color better and, if used properly, it doesn't shrink.

Some of the oldest pieces were made of poplar and pine, while many were walnut, mahogany, birch and rosewood. The finisher of antiques must be versatile in choosing the proper finish for the particular piece he happens to be working on.

The tastes of collectors, as to colors, usually has to do with the color scheme in their home or the particular room in which the piece is to be used. The dealer may have some particular customer in mind and know exactly what will appeal to him or her. Many times it is left entirely up to the judgment of the finisher. And woe be to the man who doesn't guess right on someone's pet heirloom.

If you think commercial finishing rooms offer headaches, try finishing antiques.—R.H.B.

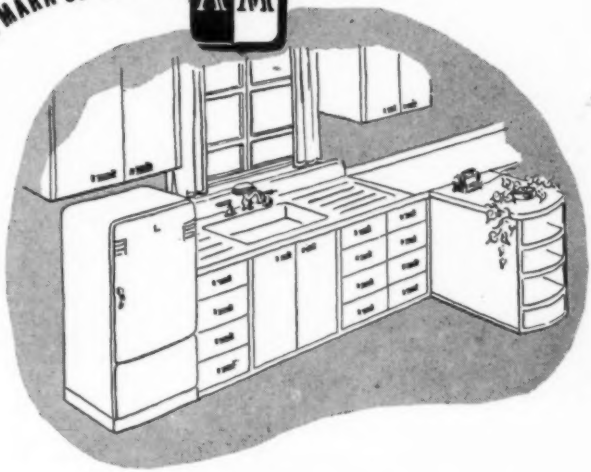
Automatic Dip Finishing

MANY SMALL and medium-size products can be economically coated by dipping, but handling these products may be a real problem. Individual dipping of each piece by hand is slow and costly, and the finished paint job is likely to have a poor appearance. The answer is automatic dipping and baking on a conveyor line. One or more coats may be applied and baked, the articles being handled only at the loading and unloading points.

The usual dipping arrangement under an overhead conveyor line involves a downward loop in the conveyor rail directly above the dip tank. Parts hanging from the overhead conveyor chain are automatically immersed in the paint and slowly withdrawn. After proper drainage above a drainboard the articles enter a baking oven. If more coats are required, the products can be sent through the system again; or more dip tanks and ovens can be provided in the same production line.

Paints and other coating materials must be specially formulated for dipping, and must be kept at the right temperature and consistency. The withdrawal rate of the article from the paint is important. This is governed by the conveyor's speed of travel and the curvature of the loop in the conveyor track. Withdrawal rates of

THE MARK OF QUALITY IN FINE PAINT FINISHES



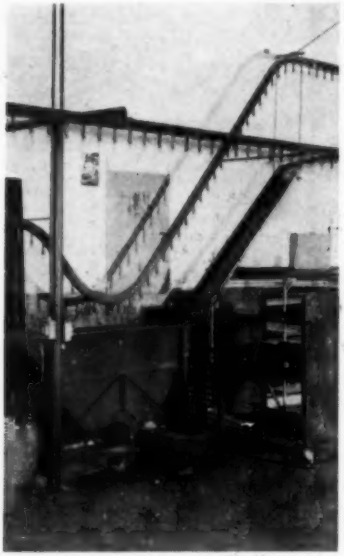
A-M SYNTHETIC ENAMEL for Wood or Metal Finishes

Readily adaptable to a wide variety of wood or metal surfaces, A-M synthetic enamels provide an infallible finish wherever "buy-appealing" beauty must be coupled with an active resistance to acids, alkali, grease and alcohol. A-M synthetics also afford excellent qualities of luster and color retention . . . and application or baking times may be adjusted to any schedule. If yours is a product for kitchen, hospital or similar use, investigate the advantages of an A-M synthetic finish . . . the MARK OF QUALITY on any line.

American-Marietta Company

43 E. OHIO ST. CHICAGO 11, ILL.

A GREAT NAME IN PAINT MAKING



Typical small automatic conveyor-dip-coating setup for small parts.

4 to 12-in. per minute are common. With faster rates there is more danger of runs, sags, and other imperfections.

Proper drip time is necessary. Drainboards or troughs sloping back to the dip tank will help to recover drainings. Automatic electric detearing equipment may be used to remove the partial drops of paint that form on and cling to sharp edges. Then the coated articles enter the baking oven. —C.C.N.

Humidity Control in Factory

A colorful, 8-page booklet about humidity control in your plant has just been issued by Surface Combustion Corp., Toledo, Ohio. It explains the principle of operation and details of application of the Kathabar System of Selective Humidity Control for industrial processing applications.

Finishing Small Parts Economically

By John Raine

A CUSTOM finishing shop is called on to finish many types of articles. We have one contract to finish small metal discs about 1/16-in. thick, 1-in. in diameter. Another contract calls for finishing a small L-shaped corner brace, approximately 1-in. wide at the center, tapering to both ends.

We tried dipping, spraying and tumbling, with no success. Dipping proved unsatisfactory because pieces nested, consequently received no coating. Spraying was too expensive due to loss of material in overspray. Tumbling gave the best results, but it was extremely slow. Then we installed a whirl-finish machine, and this proved to be both economical and very fast.

The process is simple. Parts are run through a vapor degreasor, placed in the circular wire basket, and the loaded basket is placed in position in the whirl-finish machine. Synthetic enamel is mixed with 50% solvent in the reservoir of the machine. The basket, loaded with parts to be coated, is lowered into the reservoir and then raised into position for whirling. The machine is operated for 3-minutes. In this space of time, all excess enamel is removed from the parts by centrifugal force exerted by the whirling motion of the basket.

The next step in our present system is to remove the basket and place it on a rack between two horizontal banks of infra-red lamps where parts are baked at 350° F. for 12 minutes. By this method, we maintain a finishing cycle of approximately 21 minutes. We plan to reduce this to a 10-

Palmer-Bee Conveyors . . .

furniture industry's only alternative!

The need for mechanized production methods never was more urgent. Drastic increases in labor and material costs, coupled with the demand for better quality furniture by the trade, leave the manufacturer with but one alternative.

That is to switch to the mass production methods of the automobile industry . . . to put production on wheels . . . wheels of P-B Conveyors.

The old notion that mass production of any product cheapens it is true only in the sense of economy, not quality. Quality is actually improved because chances of marring or scuffing are practically nil.

If you are being squeezed between sky-rocketing costs and the demand for higher quality, lower-price products, better call in a P-B Engineer.

PALMER-BEE COMPANY

DETROIT 12, MICH.

minute cycle by installing a metal-mesh, endless belt conveyor driven through a variable speed drive. The belt will travel between two horizontal banks (over and under the belt) of infra-red lamps. After whirling, parts will be spread out on the metal belt for baking and the wire basket loaded for the next cycle.

On shaped items care must be exercised to see if nesting will occur. In our case we do not have too much trouble with this, and the few corner braces which nest inside the machine to the extent that the surface is not covered, are thrown back in to the next basket.

The number of colors to be applied will determine the number of reservoirs required. We use two colors, hence two reservoirs are used. Excess material whirled off the parts drips back into the reservoir, and, of course, some adheres to the inside of the machine. It is not necessary to clean the inside of the machine when changing colors. In our case we wash the interior of the machine once a week. Cleaning periods will depend largely on how continuously the machine is used.

Storage for Drums of Materials

IN INDUSTRIAL plants that use large quantities of enamels and other finishing materials, the proper storage of these liquids is important. Storage should preferably be in a separate fireproof building which is properly heated. If the storage space is not properly heated in cold weather, the materials brought to the finishing department will be too cold to use immediately. If reduced with thinners to proper spraying consistency at once, they will be too thin when they do reach room temperature.

Safe handling of filled drums is important too.

If storage must be in the open, then drums should be up-ended and tipped slightly to prevent water from collecting on their ends. This can be done by placing a 2 or 3-in. block under one edge of the up-ended drums. The bungs should be on the high side so that what water does collect, will not be around them. Otherwise some water may seep in and contaminate the material. In cold weather, drums of material brought into the finishing department should be allowed to stand in a heated room 24 hours before reduction or use.

A system of stock control should be used. Stocks should rotate; that is, old stocks should always be used first. The necessary wrenches, hand trucks and accessories should be available at all times for transporting and opening containers.—S.C.F.

Everything for Wood Finishing

SINCE 1888

Complete Line of Finishing Materials

Everything you need to finish your product — abrasives — stains — fillers — paints — varnishes — shellacs — lacquers — brushes — wood cement, etc. Literature and information for your specific problem sent upon request. Check list below for General Catalogue list No. 1 and color charts available.

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10 CHRISTOPHER STREET NEW YORK 14, N. Y.

H. BEHLEN & BRO. INC.
10 Christopher St., New York 14, N. Y.

Gentlemen: Please send the following:—

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..... Bronze Powder
..... Spray Lacquer
..... Match-O-Stain
..... Wood Cement "Shellac Sticks"
..... Aniline Stain
..... Liquid Stain
..... Paste Fillers

Name.....

Street.....

City..... Zone..... State.....

Materials Supplies Equipment

Power Graining Machine

A graining machine wherein the heavy graining roller is power driven, is illustrated in the accompanying cut. The roller and its driving mechanism are mounted in a carriage which runs over a track. First the roller moves over the inked graining plate, where it picks up the inked pattern. Then as it moves forward it raises slightly to clear the end of the graining plate and the space next to the panel or other work to be grained.

Next it makes contact with and travels over the surfaces to be grained—printing the reproduction of wood or marble grain on the work as it moves along. The machine will print a surface as large as 30x80-in.

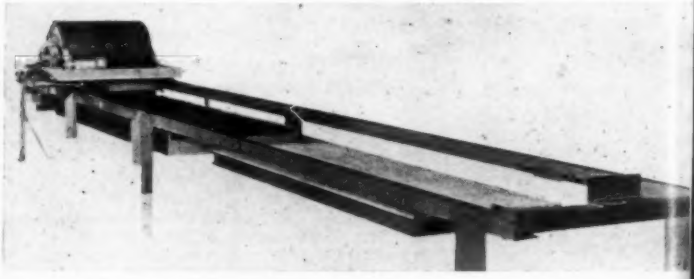
When the carriage reaches the end of the track it is automatically raised so that it will not touch the work. The motor then reverses and carries the roll back to the starting position where there is an attachment for automatically cleaning the roller.

This graining machine is made by American Richwood Products Co.. 104 E. Mason St., Milwaukee 2, Wisc.

"Alodine" Treatment Protects Aluminum Against Corrosion

With the discovery and development of "Alodine" in the laboratories of the American Chemical Paint Co., Ambler, Penna., it is now possible to produce on aluminum the protective type of coating hitherto associated only with anodic treatments and to do it simply, rapidly and economically.

Alodizing is essentially a chemical process, requiring no electric current for its operation. It can be used for protection against corrosion, both on painted and unpainted aluminum. Alodized and



The motor driven graining roller is guided by a track as it moves over inked graining plate and then over the surfaces to be grained.

In one, easily applied operation

CLAREMONT FLOCK

transforms jigged-out platforms into quality-finished display trays, instrument cases, jewelry bins, etc.

Items shown, by courtesy of the G. I. Flocking 124 W. 21 St. New York

SAVE WORK
SAVE MONEY. . *Use Claremont Flock*

8 color choice. Cotton Rayon Wool qualities in stock. Write for color card and complete details. Samples available for experimental tests. Country's largest manufacturer of flock, stands ready to serve you. Inquires invited!

CLAREMONT WASTE MFG. CO. Claremont, N. H.

painted panels have lasted for over 2000 hours in a salt laden atmosphere.

Unlike conventional electrolytic and chemical processes, however, "Alodine" does not produce an oxide coating. A thin, tough skin positively integrated with the metal is formed by the interaction of aluminum and the "Alodine" chemicals. Characteristics of this skin are its stability, flexibility and adherence which enable it to withstand all manner of shocks caused by bending and denting.

For clean, unoiled aluminum only two steps are necessary to bring the work to completion if it is to remain unpainted; or three stages for work that will be painted.

Aluminum to be Alodized is treated for two minutes or less in a chemical solution heated to a temperature no higher than 120°F. The next stage consists of either drying (if the work is to be exposed unpainted) or rinsing (if it is to be painted or waxed).

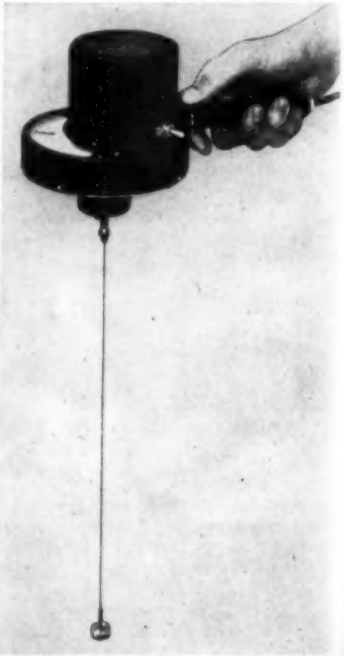
Extension Spindle for Viscosimeter

A new Extension Spindle which greatly extends the usefulness of the Brookfield Synchro-Lectric Viscosimeter is announced by The Brookfield Engineering Laboratories, Inc., Stoughton, Mass. Point of process readings can be taken with this device where is was formerly impossible due to heat, boiling, foaming, fumes or other physical conditions which prevented the operator or instrument from getting close enough to make the reading.

The New Extension Spindle is also of great value where surface turbulence or undulation of the liquid level made accurate readings impossible. The new spindle goes far enough below the surface to be unaffected by such motion, and readings are independent of depth of immersion within wide limits.

Spindles can be supplied in any length needed, enabling the operator to be as far above the liquid being tested as necessary for comfort. Readings can even be made from the floor above by passing the spindle through a small hole in the ceiling. A platform can be utilized in the same manner to shield the operator.

The new extension spindle is



Extension spindle can be supplied in any length needed.

Have you heard that ALAKA is not only dependable but durable? Yes, it can stand any amount of bending and pressure without cracking and losing adhesion.

After going through severe tests, ALAKA FINISHES were found to be more durable than all the other finishes tested.

Here are a few ALAKA FINISHES developed for specific purposes.

Wrinkle Finishes
Zinc Chromate Primer
Quik-Bake Synthetics
Air-Dri Synthetics
Synthalak Synthetics
Cellulose Acetate
Finishes for Plastics

Marine Lacquers
Aircraft Speed Finishes
Brass Lacquers
Bronzing Lacquers
Textile and Silk Screen Lacquers
(Lacquer Enamels—All Colors)
Surfaces, etc.

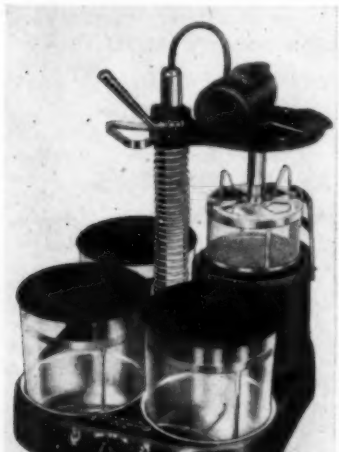
Metallic Lacquers
Wood Lacquers
Adhesives and Cements
Fungus-Proof Lacquers
Water Dip Lacquers
Glass and Porcelain
Engine Lacquers

LACQUER & CHEMICAL CORPORATION — 220 FORTIETH ST., BROOKLYN 32, N. Y.

interchangeable with the standard spindles and the changeover is simple and rapid. Extension spindles can be used on all Brookfield Viscosimeters except one.

Cleaning-Drying Machine for Small Parts

The Industrial Precision Cleaning Machine is offered by the L & R Mfg. Co., 577 Elm St., Arlington, N. J., for the processing of instruments and small parts too difficult to handle manually or in any other type of equipment. The work basket measures 3½-in. deep by 5½-in. in diameter into which the triple nesting baskets fit so that three sets of parts can be cleaned at one time without the danger of their becoming mixed. The unit is also furnished with controlled reversing action which adds materially to the machine's efficiency. Aluminum cups under the jars assure more protection for the pyrex containers and perfect alignment with the basket.



Cleans, rinses and dries small parts.

The unit is completely self-contained and cleans, rinses, polishes and dries parts which are too delicate for manual handling or for processing in other types of equipment. Sections of the triple basket can be sent to various departments to prevent contamination of the parts before they are assembled.

"Duco" Metalli-Chrome

The DuPont Co. announces that its new automotive finish—"Duco" Metalli-Chrome nitrocellulose lacquer—is now available for overseas distribution. Since the new finish was introduced to the domestic trade in May, 1946, numerous inquiries have been received from foreign countries. Up to recently the shortage of raw materials and other production problems have made it impossible to accept orders outside the United States. With more normal production conditions prevailing, the Finishes Division is now able to make Metalli-Chrome available for export.

Metalli-Chrome was developed at the DuPont laboratories in Parlin, N. J., where the original "Duco" was invented. Tests have shown that Metalli-Chrome is extremely durable. Its production involves entirely new techniques in the use of pigments, which make it possible to provide rich, lustrous colors.

The deep-glowing appearance of automobiles finished with Metalli-Chrome comes from the high degree of translucency of the lacquer film. Light penetrates it and is

FOR PERFECT BURNING-IN JOBS

• Perfectly Matched Colors
• No Color Runs or Smears
• No Air Bubbles or Color Specks

Approx. Size 3½x⅝x⅜

Approx. Size 7⅛x⅝x⅜

- **LACSTIX** Made of the finest materials. Will not lift, shrink or swell in or under lacquer.
- **SHELSTIX** Made of choice shellac gums and resins. To repair standard finishes.
- **PORCELSTIX** A unique combination of water-proof, heat-proof resins. Repair porcelain, china, marble or tile.
- **VARSTIX** Made for varnish finishes. Will not lift, shrink, swell in or under varnish.
- **SYNSTIX** Made of special resins for modern synthetic finishes—to withstand solvenizing action.
- **ENAMELSTIX** To repair enamel-finished wood or metal. Will not swell, lift or shrink in or under any type of enamel.
- **CEMENTSTIX** Special wood cement fill, made of pure gums and colors.

You can do a perfect burning-in job quicker and easier with Finishine's famous Burning-In STIX for every purpose. 350 standard colors and formulas. Your own special colors matched perfectly at slight extra cost. Made of finest color stains and gums.

Special Introductory Offer

Find out for yourself the STIX best suited to your requirements. One each, all seven brands, assorted colors, $2.89.

FINISHINE LABORATORIES, Inc.

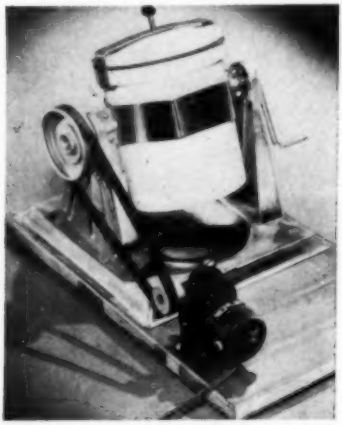
627 Tallman Street **Syracuse 4, New York**

reflected to the eye from within instead of from the surface. Metalli-Chrome's glowing effect is increased by small particles of metallic aluminum which act as tiny mirrors, diffusing and reflecting light within the film. Thus, for example, what appears to be a deep black when the light is subdued, becomes a warm gunmetal when sunlight strikes it.

Small Power Driven Tumbling Machine

A new addition to the Tumble-Jar family, manufactured by Andrew Technical Service, 111 E. Delaware Place, Chicago, Ill., is a motor-driven model. Powered by a gear reduction motor, it rotates a glazed chemical stoneware jar, 6-in. in diameter by 8-in. high, at a speed of approximately 55-rpm.

Owing to the heavy weight of the glazed jar, it can also be used as a ball mill. The jar has a reinforced rim and stoneware cover which fits tightly against the soft rubber gasket by means of a metal clamp, making it leak-proof in use. Overall dimensions are 14x22x15-in. high. The motor will operate on 115 volts A. C. 60 cycles or D. C.



A tumbler for very small production and for general experimental work.

In chemical process work, the unit is applicable to research operations and pilot tests on chemicals, coloring agents and dyes, inks, pigments and paints. It can be used for blending, mixing, dispersions, emulsions and colloids. Liquids and solids can be handled.

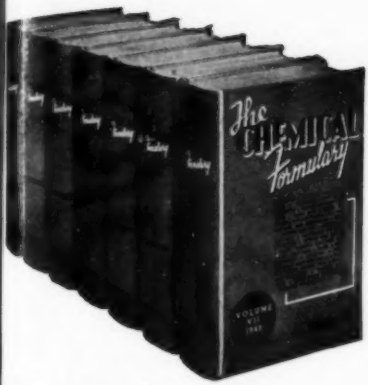
Industrial applications include small scale tumbling and deburring operations for metal parts, ceramics, rubber and plastic materials.

Removes Static Electric Hazards Safely

Elimination of a fire hazard common to many coating operations has been accomplished at the plant of the Pantasote Company, Passaic, N. J., in a new and simple way. In this operation, static electricity is a constant and dangerous problem, as the product moves through the machines, for a spark can ignite vapors of the volatile solvents used.

Static charges are now safely drawn off by application of an Ionotron static eliminator. This device consists of a shielded horizontal bar supporting a strip of radioactive alloy at the point on the machine where the static charges tend to build up. The air at this point is ionized by the alpha rays from the radioactive source, and acts as a conductor to draw off the charges harmlessly as they are generated.

The chief engineer of another large firm in the plastic coating field, who has had Ionotrons in-



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Vol. VII—$7.00

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EDITOR-IN-CHIEF, H. BENNETT

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It is an entirely new book, complete in every detail. Each formula is new and different. Not one formula contained in the previous six volumes is repeated in this book.

From thermoplastic adhesives to insecticides, from leather dressings to vegetable preservation, from invisible inks to refractories, from antifreeze solutions to metal finishes—this valuable book describes and explains the latest commercial methods and processes.

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Polishes	Specialties	Insecticides	Glass	Soaps
Lubricants	Removing Stains	Pharmaceuticals	Textiles	Cleaners
Drugs	Bleaches	Oils & Fats	Fibres	Waterproofing
Farm & Garden	Ceramics	Liquors	Beverages	Metals
Specialties	Deodorants	Dyeing & Coloring	Flavors	Alloys
Resins	Disinfectants	Fluxes	Rustproofing	Glues
Cements & Concrete	Laundry	Explosives	Metal Treatments	Pastes
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INDUSTRIAL FINISHING Magazine

1142 North Meridian Street **Indianapolis 4, Ind.**

stalled on machines in his plant, said, "The application of the Ionotron in our plant is in connection with a coating machine applying solvent solutions to paper. The Eliminator prevents build-up and discharge of static near the lacquer reservoir, which has, in the past, become ignited through discharges of static."

The Ionotron is a product of United States Radium Corp., 535 Pearl St., New York City 7.

New Technique for Applying Bakelite Coatings

A new improved application technique for nation-wide field installation of heat-hardening (Bakelite) films has been developed by Stalpic Coating Corp., 1128 W. Armitage Ave., Chicago 14, Ill.

This process produces vitreous, smooth, corrosion-resistant barriers at the site on new or existing metal equipment, the interior or exterior of pipes and tank interiors. These barriers are inert enough for contact with pure foodstuffs and rugged enough to be used in handling acids, salt solutions, solvents and oils.

Preparation of the surface, application and heat-curing at intake temperatures up to 600° F. are accomplished by modern, portable apparatus and efficient, trained crews. The cost approximates half of today's cost of field erected mild steel tanks with the same dimensions.

To help users determine the best coating for specific exposures, the company offers literature, laboratory tests and consultation services. Steel rods, coated with a recommended film, are available when requests are accompanied by data describing contemplated uses.

Portable Electric Disc Sander, Polisher

A new portable electric sander and polisher, called the Clarke Duo, is being distributed by Diamond-Detroit, Inc., 8270 General Motors Bldg., Detroit 2, Mich.

Plugs into any electric light outlet.

This machine can be used for smoothing surfaces to be painted or finished; also for smoothing preliminary coats of primer, sealer or surfacer, and for buffing and polishing the final top coat of lacquer, varnish or enamel. It takes power through an extension cord which plugs into any 110-volt electric light socket, AC or DC.

The machine weighs only 4-lbs. and has an easy-grip handle with convenient trigger switch. A 10-ft. rubber-covered extension cord is supplied. The disc rotates at 3000-rpm. with normal load and at 5000-rpm. when free. Precision sealed ball bearings are used. Flexible rubber discs 3-in. and 5-in. in diameter are available for backing up sandpaper discs or lamb's wool buffers.

Booklets Catalogs Circulars

Laboratory Testing Equipment

An illustrated bulletin of equipment and supplies for the testing laboratory has been published by LaMotte Chemical Products Co., Towson, Baltimore 4, Maryland.

Wrinkle Finishes Bulletin

In No. 4, Vol. VII of "New Wrinkles in Finishing," published by New Wrinkle, Inc., 137 N. Perry St., Dayton 2, Ohio, many new products finished in wrinkle effects are illustrated. Also, there is an article about, How to Keep Wrinkle Surfaces Clean.

Steam-Detergent Cleaning

A 12-page bulletin which describes and illustrates the latest technique and equipment for steam-detergent cleaning is published by Oakite Products, Inc., 22 Thames St., New York 6, N. Y.

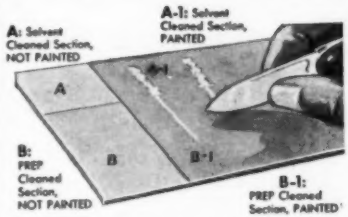
Use of Masking Tape

In issue No. 7 of the "Industrial Review," published by Industrial Tape Corp., New Brunswick, N. J., illustrated articles show the technique of using masking tape in connection with modern production painting and repainting.

Planned Finishing Systems Presented in Free Bulletin

A new and attractive illustrated bulletin of 12 pages 8½x11-in., printed in two colors, has just been released by Peters-Dalton, Inc., 17908 Ryan Road, Detroit 12, Mich. Complete systems for metal preparation, spray painting, dip coating, flo-coating and

Make this
ADHESION TEST
with
PREP PRODUCTS



The merit of Prep Products has been proved conclusively by the above tests. Many laboratory technicians and paint superintendents have been sold on Prep Products after duplicating this test in their labs and on production. We urge that you also investigate the merit of Prep Products.

METALPREP for Steel Surfaces . . . GALVAPREP for Galvanized Iron and other Zinc-coated Surfaces . . . ALUMIPREP for Aluminum Alloys . . . PREPRITE for Corrosion-resisting Phosphate Coatings.

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PAINT STRIPPER

A New Development for Industrial Paint Stripping

- Non Inflammable
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- Works Rapidly on All Types of Finishes.
- Non Injurious to Hands.
- Unisol Liquid—For Dipping, Dries Rapidly With no After Film to Interfere With Repainting.
- Unisol Paste—For Brushing, Easily Removed with Water.

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TACK RAG

BEFORE YOU SPRAY

Industrial size 18 x 36
WILL NOT SMOKE NOR GENERATE HEAT WHEN STORED IN A WARM PLACE
Always Soft and Tacky

Speed Up Your FINISHING PRODUCTION LINE with this Soft Tacky Cloth
BCP
TACKY WIPERS
Available in GROSS LOTS thru PAINT DEALERS or from the Processor

Exclusively Processed by
Baughn Chemical Products Co.
7024 North Ravenswood Avenue
CHICAGO 26, ILL.

the baking and drying of paint coatings are included in the typical illustrated setups. Everyone interested in any phase of modern finishing should get a copy of this interesting and informative bulletin. It's free.

Measures Surface Heat

Instruments for measuring surface heat are illustrated and described in a new 4-page bulletin published by The Pyrometer Instrument Co., 103-105 Lafayette St., New York 13, N. Y.

Grinding and Polishing

"Step up Production," a recent illustrated publication intended for those engaged in finishing metal parts by grinding and polishing, is now available on request from Minnesota Mining & Mfg. Co., St. Paul 6, Minn.

This 16-page booklet features the "3M Backstand Method" and contains, among other data, nine photographic case histories of plants which were able to cut grinding and finishing time all the way from 30% to 80% by adopting this method.

New Multi-Point Combustible Gas Alarm System Bulletin

A new 4-page, illustrated Technical Bulletin (No. 1142) describes the Davis Multi-Point Combustible Gas Alarm System for the detection and measurement of flammable gas or vapor at concentrations in terms of their explosibility. It is issued by the Davis Emergency Equipment Co., Inc., 15 Halleck St., Newark, N. J., manufacturers of gas detection and alarm equipment. The bulletin tells how the gas or vapor is remotely analyzed in any one or more of the 6 to 12 possible areas that can be sampled by a single Multi-Point System.

Flameproof Compounds for Fabrics

A new 4-page folder giving technical information on the physical properties of its Permaproof Series 200 flameproof compounds, which are resistant to laundering and dry cleaning, has just been published by The B. F. Goodrich Co., Akron, Ohio, and is now available upon request. The company introduced the compounds after the war, following research and development work by its organization and that of Treesdale Laboratories, Inc.

The folder describes composition of the compounds, together with instruc-

tions on how they should be prepared for treating fabrics. Equipment required for application in plants, as well as methods, also are outlined, together with specifications and testing procedures, the add-on required for various weight fabrics, and the properties of the treated fabrics.

Coal Tar Pitch Coating

A new 4-page 2-color bulletin gives details and uses for Koppers Bituplastic, a new plastic protective coating that waterproofs and vapor seals. This bulletin lists the material's special adaptability for use on aboveground tanks, gas holders, railings, fire escapes, ornamental iron work, gutters, storage tanks and towers, cooling towers, metal buildings, roofs and its ability to waterproof and dampproof any wall surface of metal, masonry or concrete.

Information in the bulletin also provides details regarding its quick drying, fire retardancy, ability to withstand temperature extremes, and applicability with brush or spray. Data on types of Bituplastic and special recommendations for use of each type are given. For a copy write Wailes-Dove-Hermiston Corp., Westfield, N. J. (Subsidiary of Koppers Co., Inc.)

Free Decal Bulletin in Full Colors

The first complete manual on truck decal advertising ever published, a full-color brochure entitled "Ads on Wheels," is now available after months of research and preparation for use by truck fleet owners, operators and advertisers.

Copies may be obtained free by writing to The Meyercord Co., decalcomania manufacturers, 5323 W. Lake St., Chicago 44, Ill. (or to The Meyercord Co., 4500 District Blvd., Los Angeles 11, Calif.)

Meyercord spokesmen described "Ads on Wheels" as a practical handbook of profitable ideas in truck advertising for fleet owners, public carriers, equipment makers, merchants, maintenance men and advertising agencies. With 130 illustrations, its colorful pages dramatize how the nation's top advertisers use trucks as "mobile billboards," cashing in on the free display area of truck panels. The brochure also calls attention to the many effective display areas on trucks that frequently escape advertisers—fenders, visors, roofs and doors.

A method of determining the effectiveness of truck advertising by a "Brand Mile Rating" is a feature of the booklet. After two variable fac-

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Complete Finishing Systems
Bronze Paste . . Bronze Powders
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M·S·A FACESHIELDS

Complete protection for eyes and face against light flying particles are yours with durable easy-to-wear M. S. A. Faceshields. Efficiently designed; built of highest quality materials; available in three headgear type and three visor lengths of various shades and thicknesses. Write today for Bulletin CN-1.

*Headline Design fits natural head contours — no pressure points! Lightweight assembly supported by center strap across head—greater comfort and greater protection!

MINE SAFETY APPLIANCES CO.
Braddock, Thomas and Meade Streets
PITTSBURGH 8, PA.
District Representatives in Principal Cities

For Difficult Cleaning Jobs

★

HIGH SOLVENCY
HIGH FLASH
POINT

ENNJAY 100

★

William J. Hough Company

SEEley 0505

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tors are established—traffic density and inherent attention value of the truck sign—the "Brand Mile Rating" for any truck ad can be measured.

Special emphasis has been placed on the demonstrations of effective and successful advertising ideas throughout the publication. Illustrations of actual truck decals show by example the interesting and varied use of brand names, trademark, product illustrations and other advertising messages on truck fleets of every kind.

Solvent Recovery Book Free

A new and completely revised edition of the booklet, "Solvent Recovery by the 'Columbia' activated Carbon System," has just been published by Carbide and Carbon Chemicals Corp., a Unit of Union Carbide and Carbon Corp., 30 E. 42nd St., New York 17, N. Y. This 30-page booklet contains complete information on solvent recovery and other applications of activated carbon. Detailed explanations of how solvent recovery systems work, what equipment is used, cost of operation and recommended industrial applications are included.

Deoxidine Bulletin Free

A 4-page bulletin describes and illustrates the use of "Deoxidine," which "removes rust, destroys rusters, cleans and conditions metals for painting." After all, the key to good paint adhesion on metal is proper surface preparation and conditioning. Without it, the best paints and the best paint systems are of little value. Metal cleaning, to be really effective, must remove visible rust and surface oil and eliminate invisible as well as visible rust stimulators.

For a free copy, write American Chemical Paint Co., Ambler, Penna.

Synthetic Organic Chemicals

A new and revised edition of the booklet, "Physical Properties of Synthetic Organic Chemicals," has just been issued by Carbide and Carbon Chemicals Corp., a Unit of Union Carbide and Carbon Corp. This 12-page booklet has been designed as a condensed guide for users of organic chemicals. It contains data on applications and physical properties for more than 175 synthetic organic chemicals. The material is presented in tabular form for ready and easy reference. Copies may be obtained without charge by writing to Carbide and Carbon Chemicals Corp., 30 E. 42nd St., New York 17, N. Y. Ask for Form 6136.

Industrial FINISHING

Distributed Monthly to finishing room and paint shop foremen, production superintendents and company officials of metal-working, woodworking and miscellaneous industrial plants where production cleaning and finishing are major operations in parts and products manufacture.

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Editorial

What Makes Your Business Click

Coordination and cooperation are perhaps the two most important words in the dictionary, insofar as your business is concerned. It matters little whether or not you are an employer or an employee, or what your line of business happens to be. Perfect timing and pulling together is another way of expressing it.

What would the results be if, while an orchestra was playing, several musicians didn't keep time with the others, or if some of them just decided to stop playing for a while? It would be disastrous insofar as harmony is concerned.

The same thing happens in your organization if there is a lack of coordination and c o o p e r a t i o n among individuals in it. Perhaps you will not notice it as quickly as an orchestra leader, but it will affect your business sooner or later if it is allowed to continue.

Manual Handling is Too Costly

Regardless of its size, the concern that makes low-priced or medium-priced small parts cannot afford to move these products manually around the plant while they are in process. Manual handling is slow and expensive. Every time an item is placed on a table or bench and every time it is put on a truck (even though the truck is of special design) it must be moved again—and all of this contributes to excessive cost. The answer: Install a conveyor.

Some plant owners declare that a conveyor is not adaptable to their place; that their production runs are too short; or that sizes and shapes of items vary too much; or that, due to changes in production, things they may make in the future could not be handled on the conveyor. How all of these theories were debunked by two progressive concerns are revealed in the following cases:

A millwork company received an order for several million feet of

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for

QUALITY

Wood and Metal Finishes

STAINS
FILLERS
SEALERS
LACQUERS
VARNISHES
SYNTHETICS

We are now supplying the furniture trade with 4-HOUR DRYING FILLERS. It can help you speed up production. Write today.

FACTORY & LABORATORY

THE GILBERT SPRUANCE CO.

RICHMOND & TIOGA STS.

PHILADELPHIA, PA.

SPRUANCE QUALITY

mouldings to be used on prefabricated houses. These mouldings had to be prime coated—inside mouldings a color coat, outside mouldings white. Due to the profile of the mouldings, roller coating was impossible. The company put in two automatic spray machines—one for inside mouldings, the other for outside—and enclosed the angle-iron frames with sheet metal. Passing through each machine is 50-ft. of 1-in. chain which is fitted with sharp spur points on 6-in. centers. The chain rides between two angle irons. Wide mouldings are spurred directly to the chain, while narrow mouldings ride through on top of pieces of scrap material 4-in. wide.

Mouldings are delivered from woodworking machines to the finishing conveyor by a fast moving belt conveyor. At the infeed end of the finishing conveyor racks hold any excess mouldings that come in over the belts. At the outfeed end of each finishing conveyor there is an inclined rack over which mouldings slide sideways down to the bundlers. Bundled mouldings are loaded in cars just outside the door.

I also have in mind a manufacturer of novelty furniture—magazine racks, combination telephone stand and seat, smokers, end tables, etc., all sizes and all shapes. Next week or next month any one or more of the items may be dropped and another item of different size and shape will replace it. Unlike the millwork concern whose normal business does not include prefinished mouldings, the novelty furniture firm installed a permanent and efficient horizontal pallet-type conveyor which is elevated 24-in. above the floor. The pallets are made of ¾-in. plywood 38-in. in diameter. Each pallet is sup-

ported by a center pin which permits revolving the pallet and its load for spray finishing.

Regardless of shape or size, any item in the present or future line, so long as it will fit on a 38-in. stand, can be handled. This conveyor passes through spray booths, drying ovens, around curves, and down the straightaway. For processing off the conveyor, it is simple to lift a light-weight piece off and replace it with a processed piece.

Factories that make other products can be more or less conveyorized too. Experienced engineers are the logical people to design and layout practical conveyor systems to suit local plant conditions and to take care of present and probable future production requirements. It's something to look into where manual handling of products in process is still practiced.

Perfect Safety Record

Apex Electrical Mfg. Co., Cleveland, Ohio, chalked up a perfect safety record during the month of June, when no time was lost due to accidents in either the Cleveland or Sandusky plants during 462,325 exposure hours.

Apex safety director Lou Lackner, pointing out that this is an unusual achievement in a heavy machinery industry, said this marks the first month since a safety program was instituted a number of years ago wherein a "no lost time" record was attained.

Hercules Sales Office in Detroit, Mich.

Establishment of a new sales office in Detroit, Mich., is announced by Hercules Powder Co.'s Naval Stores department. The new branch sales office is located in Detroit's Fisher Building, room 628. Mr. Robert S. Glover, Jr., manager of this office, supervises the sale of rosin and terpene derivatives, Naval Stores products, in the lower peninsula of Michigan and the state of Ohio.

SAFEGUARD YOUR SPRAY BOOTHS

Layers of inflammable paint come off more quickly if you have applied Wyandotte Spray Booth Coating first. Only a thin coating makes cleaning easier, speedier, more economical.

And you can reduce your floor-cleaning costs with Wyandotte F-100*. Even heavy soil stands no chance against this remarkable compound.

For more information about these Wyandotte Products, write the Wyandotte Chemicals Corporation, Wyandotte, Michigan.

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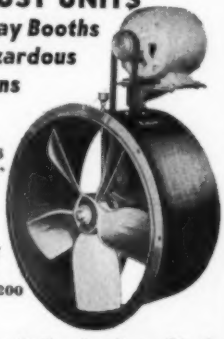
EXHAUST UNITS
for Spray Booths and Hazardous Locations



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Immediate Deliveries from Stock.

Also Manufacturers of a complete line of waterwash and dry type paint spray booths with accessories. *Send for details.*

M. & E. Manufacturing Co.
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LACQUER and SYNTHETIC ENAMEL FINISHES

By Ray C. Martin

The author takes up the raw materials that enter into the manufacture of these important finishes and includes laboratory formulations and testing, manufacturing methods, requirements of many types of finishes for various industries and products, methods of analysis, methods of applying finishing materials, chapters on furniture finishing and automotive finishing, a glossary of terms used in the industry with clear explanations of what they mean, and an alphabetical index of subjects covered in the book. Price $5.50 postpaid; cash with order.

Order from

Industrial Finishing
1142 N. Meridian St.
Indianapolis, Indiana

526 pages.

6 x 9-in.

Over 100 illustrations.

Price $6.25 postpaid.

Buyers Looking for Quality, Service

★ Commenting on the economic state of the nation, W. W. Sebald, an executive of the American Rolling Mill Co., Middletown, Ohio, makes an observation that is becoming increasingly clear when he states simply: "A Battle of Competition looms ahead on the business horizon."

His remarks on what lies ahead, appearing in a recent issue of the company's house magazine, *The Arm-co-operator*, are of timely interest. To reduce it to its briefest terms, the implications of this change in the scheme of things to those who work at steelmaking are identical, in most respects, to the effects of this transition upon industrial finishers.

Here's what Sebald says in connection with the battle ahead:

"In the stores where you buy, you may have noted some of its early indications: Scarce articles back on the shelves, service more prompt, advertisements that say 'May we serve you?' We are changing from a seller's market to a buyer's market. Folks are shopping around again, seeking the best quality, the best service, best prices."

Continuing, Sebald points out:

"For us, as with the Main Street merchants, there will need to be a new emphasis on quality. There will need to be an even greater stress on service; our ability to supply our customers with the

---

★ Guest Editorial . . . Many readers can write an excellent editorial — two or three paragraphs that present a timely suggestion or valuable idea which will stimulate thought on a live subject. The Editor welcomes guest editorials and pays for those that are published.

POTTER PAINT CO., INC.
CORTLAND • NEW YORK
IMPROVED LACQUER THINNERS AND SYNTHETIC REDUCERS
Our Specialization Can Save You Money
WRITE TODAY FOR FREE SAMPLES
BETTER FLOW GLOSS AND BLUSH RESISTANCE
THINNER SPECIALISTS

things they want with promptness, with delivery-as-promised. More important than ever before, in the coming years of keen competition, will be the matter of costs. If the cost of producing our products is greater than that of our competitors, if we cannot meet their prices, we lose business. Loss of customers would mean the loss of our life-blood. Our jobs are only as permanent as the constant purchases of our products make them."

With the emphasis on quality and the need for lower production costs, the Armco executive touches upon questions which likewise vitally concern industrial finishers —questions that must be dealt with vigorously and constructively.

New machines, expanding plants and their production units—all are useless without men to operate them, he says. The things customers want—quality, service, economy—cannot come from machines alone; only men *working together* can make them possible. "With teamwork and harmony within our ranks, and the dependable, time-tested Armco Policies to guide us as we work together, we can face our problems of the future with confidence of victory!"

Here, in short, is a gospel that all of us would do well to preach and practice. It is a sound philosophy, based on a realistic, common-sense forecast of "things to come" in the light of the way things are moving currently.—C.

Things to Do

★ In a short time the summer season will be over, and with it most plants will be in position to prepare for the colder weather a few months away. Those leaks around spray booth exhausts are waiting to be sealed up so that the fall rains and winter snows won't leak through. Weather stripping drafty doors and windows can be handled easily now and it will save expense later.

By the way, a cleaning up of the junk pile of empty paint buckets and other outdoor trash should also come in for early correction while the weather is still favorable.

New parts for spray equipment as well as moisture and oil traps in the air supply system are ready to receive your attention.

Let's start perking up our production unit morale by trying to get employee cooperation and better efficiency through the use of modern common sense instead of some pre-historic methods. It may take a little longer this way,

BLEACHES
Decolorant • Color Dissolvent
Aspen Concentrate
Write for information and quotations.
H. BEHLEN & BRO., Inc., 10 Christopher St., New York 14, N. Y.

SOLVENTS RECOVERED BY
THE LOFGREN PROCESS
We RECOVER YOUR
SOLVENTS & THINNERS
From - Sludge - Waste - Wash - Spoiled Lacquers, etc.
Each customer's shipment, whether one drum or a carload, receives PROPER AND SEPARATE TREATMENT. Write to:
SOLVENTS RECOVERY SERVICE
1019 Broad Street, Newark, N. J.
or—HAMMOND
SOLVENTS RECOVERY SERVICE
241 Brunswick St., Hammond, Ind.

but it will pay off faster and for a longer period of time.

Have you made arrangements to dispose of your discontinued numbers on a job lot basis, or are they gathering dust and taking up valuable space? Many a plant has this type of accumulation on its premises, wasting space, while the big chiefs moan about the lack of room for facilitating the movement of goods in process, or for stocking up of current production.

How is your "brain trust" department? Do you give them your problems to work on, or do you spend your own valuable time trying to solve all the plant problems while you are paying good money to your "brain trust" and research staff?

You have quite a big task to get finished satisfactorily before old man winter suddenly pops in and freezes your contemplated work, and gives you a bad time for neglecting to take care of the many brief jobs while the weather is still satisfactory. Think it over. —A.N.

Free Book on Finishes

A new book on "vinyls," published by Bradley & Vrooman Co., Chicago 16, Ill., is now available. This book is written for both laymen and technicians. It describes, in a concise and understandable manner, the differences between solution and dispersion types of vinyl finishes and gives complete and valuable data on methods of application and curing. It outlines many uses of these materials, both as decorative and protective coatings in clear and all colors, for use on steel, paper, cloth and plastics. It also covers self-sustaining film and elastomeric products. The book is entitled, "The Sterilkote Twins," and may be had for the asking.

Incentive Pay Plan for Workers

A successful incentive pay plan for factory workers—one that is satisfactory to both management and union labor—has been in operation for several years at the Apex Electrical Mfg. Co., in Cleveland, Ohio. Mr. E. C. Buchanan, operating vice-president of the company, has answered hundreds of letters about it during recent months.

Random Comment on the Industrial Scene

(Continued from page 11)

National Bank, speaking to the Export Managers Club, stated that in March exports from the United States were running at a rate of $16 billion a year, due to world shortages. Reason for the expected decline in this business is due to customers' inability to pay.

* * *

New Things to Come. Dr. Gustav Egloff, Chemist, in a lecture listed a few of the latest developments in Science, according to the Chicago Tribune. Among the many he included:

Velon, a new fabric made from petroleum and salt, which can be wiped clean with a damp cloth. It is impervious to soap, water, alcohol and ink.

Syton resin, the fibers of which can be made into snag proof hose for women.

Silica aerogel, a material that lets the moisture and heat of the body out, but doesn't let any water in—a boon to raincoat wearers.

A Vinyon plastic fiber which, if added to wool, produces water repellent material.

A new resin varnish which dries faster, wears longer and adheres to any kind of surface, including galvanized iron, bronze, brass and aluminum.

There is an industrial use for all of these products, even the hosiery.

* * *

Coaches in Color. For the first time in the railroad's history, the Rock Island has changed the exterior color scheme of its Pacific Coast trains, the Golden State Limited and the new de-luxe streamliner, the Golden Rocket,

SPRAY BOOTHS
Stay Clean
with SPRA-KLEEN
Reg. U. S. Pat. Off.

SPRA-KLEEN prevents over spray from fouling water curtain spray booths.

SPRA-KLEEN prevents clogging of nozzles, circulating lines and ventilating ducts.

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Industrial Cleaning Compounds
CRANFORD NEW JERSEY

MIRACLE

5 Gallon BLUE BOY Model

PAINT REJUVENATOR

Restores Paints, Lacquers, Enamel Products and Pigment Primers, to original consistency in 3 to 10 minutes without opening the can. Available for Round or Square 5-gallon cans. Explosion proof electrical equipment if desired. Also other units from ½-pint to 50-gallon drum capacity available. Originators of Paint Rejuvenating Equipment—ten years—thousands of satisfied users.

Miracle Paint Rejuvenator Co.
127 E. 7TH STREET ST. PAUL, MINN.

now being built. It will be stainless steel below the window line and a brilliant red above, including the roof. Here is an example of the modern trend away from what is dark, dull and monotonous, toward bright attractive 2-tone combinations, whether it be a railroad coach or a fruit juice extractor for the kitchen.

New Research Laboratory

A new research laboratory and test plant is being erected by Hanson-Van Winkle-Munning Co., Matawan, N. J. The new building will have every facility for conducting research and development of the company's cleaning and polishing products. Activities of the laboratory will further provide for experimental and test plant operations to establish each customer's specific requirements in equipment and supplies.

C. L. Jones, Jr., Promoted by Monsanto Chemical

Appointment of Chester L. Jones, Jr., as sales manager of Monsanto Chemical Co.'s protective coatings department was announced recently. Mr. Jones, who has been manager of the product development department of Monsanto's Plastics Division at Springfield, Mass., is now at the Merrimac Division at Boston, Mass.

REG. U. S. PAT. OFF.
KNU KOTE
SINCE 1899
FINISH
Refinishes and removes surface defects on furniture. Hardens in 20 minutes. Used by leading manufacturers. See your supplier or write . . .
NATIONAL POLISH COMPANY, VAN WERT, O.

Painted Parts That Glow In Darkness

MORE AND MORE manufacturers are using luminescent paints on parts of their products. They find that the demand for luminous products is steadily growing—that these materials have added sales appeal.

One firm's advertisement shows an attractive and practical application for luminescent paints—a new Telechron alarm clock with a luminous case. This is the luminous clock that Telechron is advertising nationally—a clock that home owners will buy as a "night light" for the children's room, the guest room, and for other rooms too, where the glow will add a friendly touch to darkness.

How to Stop Bleeding of Pigments and Dyes

CERTAIN red enamels contain pigments that tend to bleed into any white or light-colored enamels that may be applied over them. This bleeding may not show up until after baking or after aging for some time. Also, sometimes it is desirable to enamel over a wood surface that has been stained with oil-soluble dyes. These dyes will bleed right through

THE MISKELLA Infra-Red COMPANY
Designers-Manufacturers of
INFRA-RED OVENS · APPLIANCES · SECTIONAL UNITS · MACHINES AND CONVEYORS
TELEPHONE: HENDERSON 2100
Infra-Red
MAIN OFFICE AND LABORATORY
EAST 73RD AND GRAND AVENUE
CLEVELAND 3, OHIO

and discolor any enamel coating applied over such a surface.

A thin coating of shellac applied at about 20% solids over the red enamel or stained surface will usually seal in the discoloration. *Allow the shellac coating to dry well before enameling.* Sometimes a highly pigmented primer applied over an oil-stained surface will seal in the stain. In any event, the final coats should be applied thin, because wet, heavy coats tend to promote bleeding. Also, for best results, all coats should be sprayed. The mechanical action of a brush tends to promote bleeding.—W.O.L.

Book About Electrostatic Spraying and Detearing

A new illustrated book of 40 pages 6x9-in., compiled and published by the National Board of Fire Underwriters, describes and illustrates both electrostatic spraying and electrostatic detearing, as used in production finishing. The book also reveals what safety precautions should be observed in the operation of these systems. This book is N. B. F. U. Research Report No. 6 on Spray-Deposition and Dip-Detearing of Paints.

A copy of the book may be had on application at the offices of the National Board of Fire Underwriters at 85 John St., New York 7, N. Y.; or 222 W. Adams St., Chicago 6, Ill.; or 1014 Merchants Exchange Bldg., San Francisco 4, Calif.

Classified Advertising

Rate: 50 cents per line per insertion—minimum $1.50

LABORATORY ASSISTANT WANTED.

Laboratory assistant or formulator for small rapidly growing paint manufacturer in Chicago. Should be experienced in the formulation of lacquers and synthetics for the miscellaneous Metal Industrial Trade. Salary open. Write your qualifications. Address IF-426, care Industrial Finishing.

WANTED.

10 or 12-ft. water wash spray booth, complete with water pumps, control valves, exhaust fan and motors. SUPERIOR MFG. CO., Winston-Salem, N. C. Phone 3-5481.

SERVICEMAN WANTED

By Chicago manufacturer of Industrial Finishes. Must be experienced in finishing high-grade furniture and capable of solving difficult finishing problems. Sales ability preferred but not necessary. Excellent opportunity for man that can qualify. Give complete references and experience. Address IF-422, care Industrial Finishing.

POSITION WANTED.

Young man, Canadian, fully qualified mechanic, with general Foreman and production work experience, at present engaged by Canadian Government as an Instructor of Painting and Decorating, desires to change residence to the United States, and wishes to contact any firm desiring to use his services. Excellent references supplied upon request. Address IF-419, care Industrial Finishing.

POSITION WANTED

By young man with complete and thorough knowledge of all types of wood finishing, as service man or foreman finisher with high-class furniture manufacturing concern. Has foreman finisher background and several years experience as service man for large finishing supply house. Address IF-420, care Industrial Finishing.

RESEARCH & PATENTS.

Matured executive, chemical engineer and patent attorney, over 20 years' experience in organic coatings for metal, wood and textiles, seeks position with reputable and progressive organization as director or coordinator of research and patent work. Now located in southern Indiana. Available promptly. Address IF-392, care Industrial Finishing.

MANUFACTURERS' REPRESENTATIVE AVAILABLE

To take on additional lines—spraying equipment, paint drying and baking equipment, materials handling equipment and related product finishing items. Can give first-class representation in Indianapolis, Central and Southern Indiana. Well established. Have operated in this area for last ten years. Address IF-421, care of Industrial Finishing.